



The Tobin Tax

In 1971, Nobel laureate James Tobin suggested that there be a tax levied on foreign currency transactions. In proposing this tax, Tobin was walking in the footsteps of John Maynard Keynes, who had suggested a turnover tax for stock market transactions after the stock market crash of 1929. Keynes' intention was to stem speculative trading by giving investors an incentive to hold their assets for the long run. Unlike a turnover tax in the stock market, the Tobin tax can be implemented only with a coordinated effort of many countries; otherwise, currency transactions would simply move offshore. It is thus of interest to the United States that this summer the French prime minister and the German chancellor put the Tobin tax on the European agenda.

At the time James Tobin suggested a tax on currency transactions, the Bretton Woods system of pegged exchange rates was in shatters. The former Bretton Woods members moved to a regime of floating exchange rates in which arbitrage establishes a close link between cross-country interest rate differentials and expected changes in exchange rates. Tobin suggested that a transaction tax would weaken the arbitrage mechanism, allowing the former member countries to preserve a modicum of monetary autonomy.

Today, proponents of the Tobin tax have little in common with Tobin's proposal, save for the goal of diminishing the trading volume in foreign exchange markets. The transaction tax appeals to many economists and policymakers nowadays because it seems to be a solution to the widely accepted problem of excessive trading in financial markets, brought about by so-called noise traders. Noise is defined as news irrelevant to the intrinsic value of a financial asset. Unlike informed traders, noise traders are unable to distinguish information from noise and consequently are willing to trade frequently.

Clearly, excessive trading in itself is a waste of resources. From this perspective, levying a tax on foreign exchange transactions would improve efficiency. On the other hand, noise traders provide liquidity to financial markets. Noise traders are always available as trading partners because there is a continuous flow of noise in the market place. From this viewpoint, noise traders dampen exchange rate volatility.

In early studies of noise traders, finance scholars assumed that noise traders' erroneous beliefs are idiosyncratic and consequently have no sustained impact on the prices of financial assets. In recent years, motivated by what seemed to be excessive stock market valuations of the late 1990s, finance scholars have devised theoretical models that show that, if noise traders' beliefs are correlated, there might be sustained deviations of prices of financial assets from their intrinsic values. In these models, arbitrageurs, who attempt to bring prices back to fundamentals, are uncertain about the course and the duration of the mispricing and consequently trade less aggressively.

Would the Tobin tax be able to prevent sustained mispricing and excessive swings in valuation in the foreign exchange market? On one hand, the Tobin tax would reduce mispricing by curbing the activity of noise traders. On the other hand, the Tobin tax would make it more costly for arbitrageurs to correct mispricing, should it occur.

At best, the Tobin tax would prevent the world economy from squandering scarce resources on excessive trading. However, such a policy is hardly worth the risk of increased exchange rate volatility, especially because this seems to be what the proponents of the Tobin tax are trying to prevent.

—Frank A. Schmid

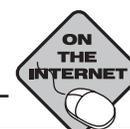


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Conventions used in this publication:

1. Charts and tables contain data that were current through October 2001. Unless otherwise indicated, data are quarterly.
2. The *percent change* refers to the percent change from the same period in the previous year. For example, the percent change in x between month $t-12$ and the current month t is: $[(x_t / x_{t-12}) - 1] \times 100$.
3. All data with significant seasonal patterns are seasonally adjusted.

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Real Gross Domestic Product

Percent change

	98.3	98.4	99.1	99.2	99.3	99.4	00.1	00.2	00.3	00.4	01.1	01.2
Canada	3.44	4.20	4.73	5.05	5.38	5.09	5.03	4.78	4.42	3.51	2.63	2.13
Euro Area	2.82	1.97	2.00	2.16	2.76	3.59	3.60	3.87	3.21	2.85	2.43	1.67
France	3.62	2.88	2.80	2.50	2.96	3.73	3.60	3.51	3.37	3.10	2.77	2.31
Germany	1.55	0.57	0.72	0.97	2.04	3.04	2.95	4.34	3.18	2.48	1.84	0.65
Italy	1.88	0.73	0.96	1.34	1.39	2.75	3.31	3.02	2.71	2.63	2.54	2.09
Japan	-0.85	-1.41	-0.38	1.02	2.07	0.44	2.38	0.96	0.34	2.50	0.20	-0.72
United Kingdom	3.00	2.57	1.81	1.64	2.30	2.75	3.04	3.31	2.74	2.44	2.70	2.31
United States	3.80	4.77	4.02	3.89	4.02	4.41	4.23	5.22	4.38	2.81	2.55	1.22

Nominal Gross Domestic Product

Percent change

	98.3	98.4	99.1	99.2	99.3	99.4	00.1	00.2	00.3	00.4	01.1	01.2
Canada	1.68	2.22	3.56	5.35	7.79	8.15	8.89	9.08	8.44	7.41	8.24	6.40
Euro Area	4.44	3.86	4.41	4.19	4.41	4.62	4.77	5.06	4.72	4.41	4.43	3.99
France	4.40	3.45	3.14	2.82	3.37	4.07	4.39	4.05	4.13	4.25	3.75	3.92
Germany	2.79	1.63	1.60	1.63	2.32	3.11	2.64	3.61	2.93	2.15	2.74	2.03
Italy	4.64	3.22	3.72	2.86	2.64	3.81	4.82	5.53	5.51	5.05	5.08	4.86
Japan	-1.27	-1.87	-1.28	-0.19	0.39	-1.36	0.84	-0.84	-1.22	0.51	-0.75	-2.91
United Kingdom	5.79	5.41	4.69	4.55	4.79	5.24	5.15	4.95	4.58	4.05	5.07	4.58
United States	5.07	5.97	5.39	5.34	5.45	5.99	6.33	7.60	6.88	5.31	4.89	3.50

Consumer Price Index

Percent change

	98.4	99.1	99.2	99.3	99.4	00.1	00.2	00.3	00.4	01.1	01.2	01.3
Canada	1.07	0.83	1.60	2.16	2.35	2.68	2.44	2.72	3.07	2.79	3.59	.
Euro Area	0.87	0.90	1.06	1.16	1.55	2.15	2.01	2.49	2.68	2.57	3.20	.
France	0.37	0.28	0.36	0.51	1.00	1.52	1.49	1.88	1.89	1.29	2.02	1.79
Germany	0.43	0.28	0.48	0.63	0.95	1.80	1.61	2.05	2.31	2.52	3.16	2.46
Italy	1.70	1.19	1.46	1.70	2.08	2.58	2.51	2.62	2.66	2.90	3.06	2.79
Japan	0.53	-0.12	-0.23	-0.00	-1.00	-0.63	-0.66	-0.63	-0.77	-0.45	-0.71	.
United Kingdom	2.91	2.23	1.41	1.18	1.44	2.32	3.13	3.20	3.07	2.55	1.91	.
United States	1.48	1.66	2.03	2.33	2.62	3.27	3.31	3.47	3.44	3.41	3.44	2.72

Employment Growth

Percent change

	98.4	99.1	99.2	99.3	99.4	00.1	00.2	00.3	00.4	01.1	01.2	01.3
Canada	2.69	2.88	2.84	2.70	2.73	3.02	2.76	2.34	2.30	1.64	1.48	1.11
Euro Area	2.08	1.96	1.72	1.82	1.96	2.09	2.35	2.18	2.05	1.66	1.08	.
France	2.09	2.26	2.21	2.36	2.94	3.22	3.57	3.78	3.80	3.70	3.23	.
Germany	1.61	1.61	0.93	1.24	1.27	1.72	2.18	1.46	1.18	0.55	0.08	.
Italy	1.30	1.07	0.75	0.70	0.73	0.76	0.95	1.66	2.55	.	.	.
Japan	-0.95	-1.23	-1.09	-0.66	-0.22	-0.46	-0.38	-0.37	0.22	0.43	-0.42	.
United Kingdom	1.55	1.10	1.30	1.46	1.76	1.26	1.18	0.53	0.65	0.67	0.63	.
United States	1.37	1.65	1.48	1.55	1.49	1.59	1.49	1.06	0.99	0.61	-0.04	-0.05

Unemployment Rate

Percent

	98.4	99.1	99.2	99.3	99.4	00.1	00.2	00.3	00.4	01.1	01.2	01.3
Canada	8.06	7.90	7.86	7.52	6.97	6.80	6.68	6.92	6.87	6.96	7.00	7.14
Euro Area	10.50	10.30	10.10	9.80	9.60	9.30	9.00	8.80	8.60	8.40	8.40	.
France	11.72	11.65	11.44	11.02	10.58	10.12	9.65	9.29	8.94	8.64	8.54	.
Germany	8.88	8.75	8.68	8.57	8.39	8.12	7.96	7.84	7.72	7.75	7.83	.
Italy	11.75	11.58	11.46	11.24	11.12	10.96	10.62	10.31	9.99	9.67	9.49	.
Japan	4.43	4.62	4.72	4.72	4.67	4.80	4.68	4.65	4.80	4.75	4.86	.
United Kingdom	6.28	6.27	6.10	5.97	5.97	5.84	5.56	5.44	5.33	5.14	5.04	.
United States	4.43	4.28	4.27	4.22	4.10	4.05	4.00	4.02	3.98	4.23	4.48	4.79

Reserve Money Growth

Percent change

	98.4	99.1	99.2	99.3	99.4	00.1	00.2	00.3	00.4	01.1	01.2	01.3
Canada	6.45	9.72	8.01	8.94	25.05	7.15	4.89	1.56	-7.88	3.20	6.92	.
Japan	4.01	6.20	6.40	7.22	14.92	10.90	6.37	3.86	-1.13	1.14	7.51	13.82
United Kingdom	5.07	5.25	6.84	7.66	9.44	9.72	8.11	7.57	6.53	6.87	6.93	.
United States	6.90	7.65	8.75	9.09	12.87	10.57	7.36	5.56	0.64	1.97	4.25	7.59

Narrow Money Growth

Percent change

	98.4	99.1	99.2	99.3	99.4	00.1	00.2	00.3	00.4	01.1	01.2	01.3
Canada	9.88	5.83	1.68	1.54	3.73	10.61	16.11	18.16	17.84	13.19	11.53	.
Euro Area	10.94	12.33	11.87	12.86	11.07	10.62	7.38	6.83	5.24	2.70	5.18	.
Japan	6.95	8.64	11.60	13.04	12.07	10.56	8.46	5.17	3.87	4.99	7.83	.
United Kingdom	5.87	6.10	6.76	7.01	7.91	7.27	7.08	7.58	6.99	8.71	10.24	.
United States	14.23	14.46	13.54	12.21	9.45	8.34	7.75	7.88	8.03	10.94	14.78	16.99

Broad Money Growth

Percent change

	98.4	99.1	99.2	99.3	99.4	00.1	00.2	00.3	00.4	01.1	01.2	01.3
Canada	1.35	1.92	2.42	2.83	3.85	4.98	6.21	6.46	6.09	5.47	5.16	.
Euro Area	4.96	5.37	5.50	6.46	7.19	7.55	6.06	5.86	4.84	7.06	9.07	.
Japan	4.38	4.11	4.30	3.33	2.68	1.89	1.86	2.00	2.13	2.59	3.15	.
United Kingdom	8.41	6.60	5.57	3.26	3.98	5.28	6.89	9.13	8.43	8.23	7.54	.
United States	8.50	8.43	8.03	7.66	6.31	6.00	6.17	6.08	6.23	7.44	8.50	9.65

Short-Term Interest Rates

Percent

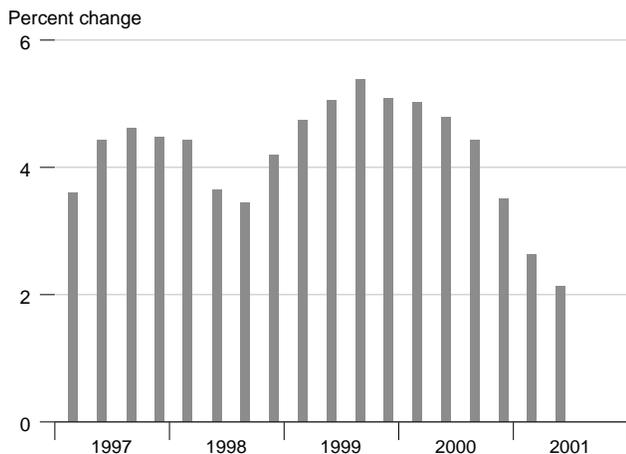
	98.4	99.1	99.2	99.3	99.4	00.1	00.2	00.3	00.4	01.1	01.2	01.3
Canada	5.13	5.00	4.70	4.82	5.04	5.28	6.12	5.90	5.81	5.10	4.48	3.95
Euro Area	3.52	3.09	2.64	2.70	3.43	3.54	4.26	4.74	5.02	4.75	4.59	4.27
Japan	0.62	0.49	0.11	0.09	0.29	0.11	0.08	0.27	0.54	0.36	0.04	0.04
United Kingdom	6.79	5.50	5.20	5.19	5.89	6.12	6.19	6.12	5.99	5.63	5.23	.
United States	5.20	4.90	4.98	5.38	6.06	6.03	6.57	6.63	6.59	5.26	4.10	3.34

Long-Term Interest Rates

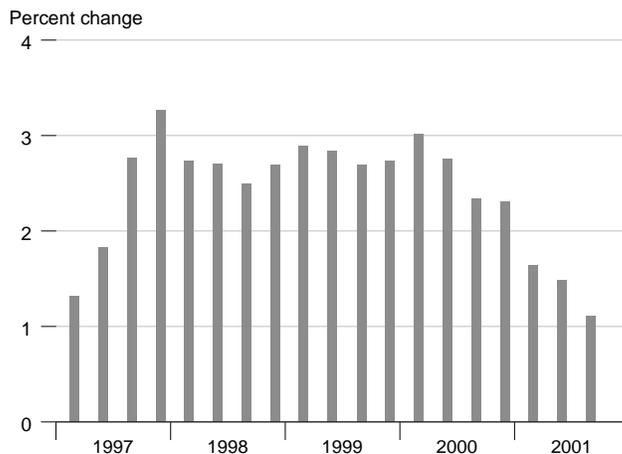
Percent

	98.4	99.1	99.2	99.3	99.4	00.1	00.2	00.3	00.4	01.1	01.2	01.3
Canada	5.21	5.24	5.49	5.78	6.21	6.20	5.96	5.81	5.72	5.67	5.95	5.90
Euro Area	4.15	3.99	4.26	5.05	5.32	5.62	5.43	5.44	5.28	4.99	5.19	5.12
France	4.45	4.31	4.55	5.20	5.71	5.93	5.90	5.99	5.75	5.48	5.55	.
Germany	4.03	3.87	4.10	4.87	5.17	5.43	5.27	5.27	5.10	4.75	4.96	4.88
Italy	4.29	4.08	4.34	5.12	5.38	5.69	5.55	5.59	5.48	5.16	5.37	5.27
Japan	1.02	1.83	1.39	1.79	1.78	1.79	1.71	1.79	1.74	1.39	1.28	1.36
United Kingdom	4.80	4.47	4.89	5.45	5.50	5.60	5.30	5.28	5.05	4.81	5.09	.
United States	5.32	5.60	6.04	6.34	6.55	6.54	6.29	6.06	5.85	5.56	5.81	5.59

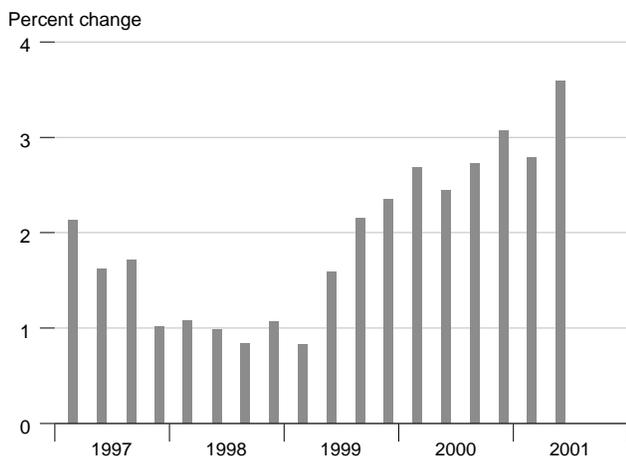
Real GDP Growth



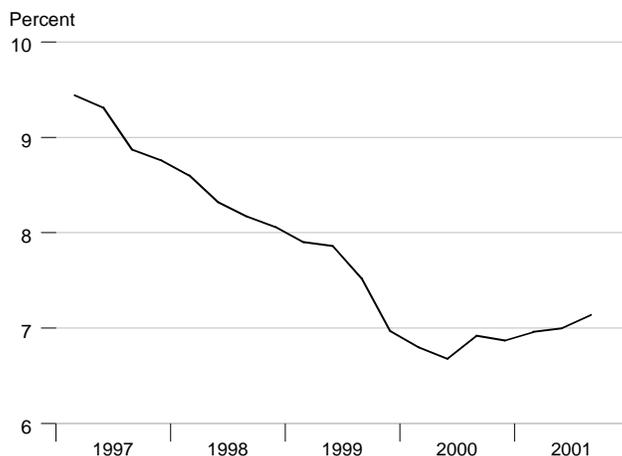
Employment Growth



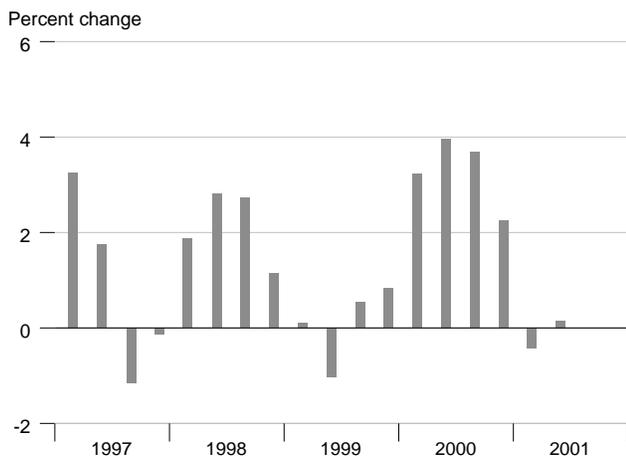
Consumer Price Index



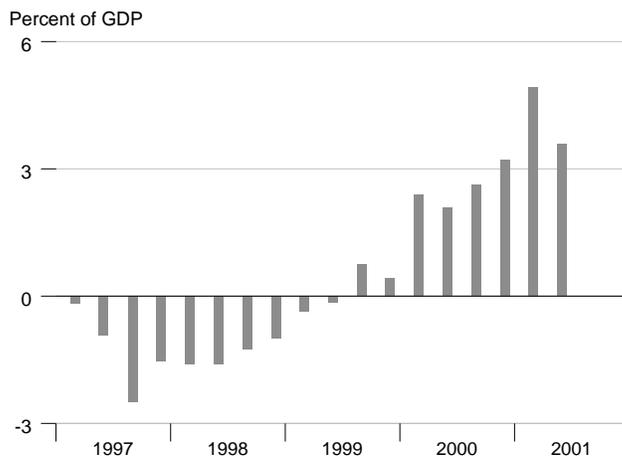
Unemployment Rate



Hourly Earnings

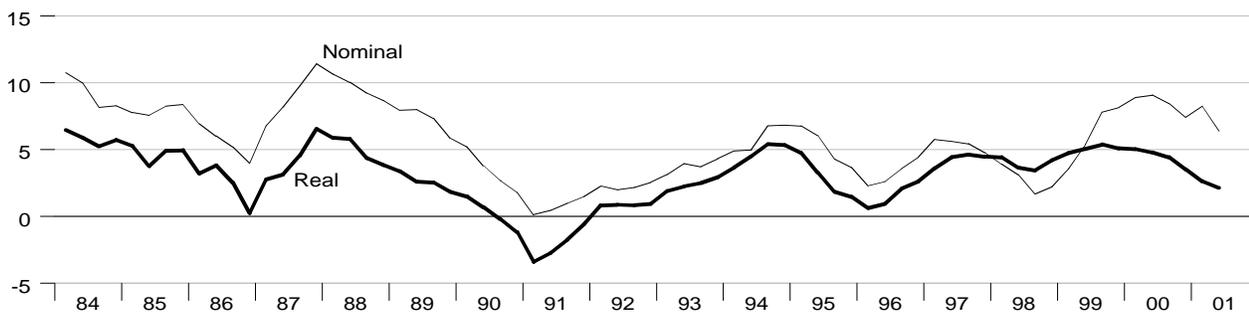


Current Account Balance



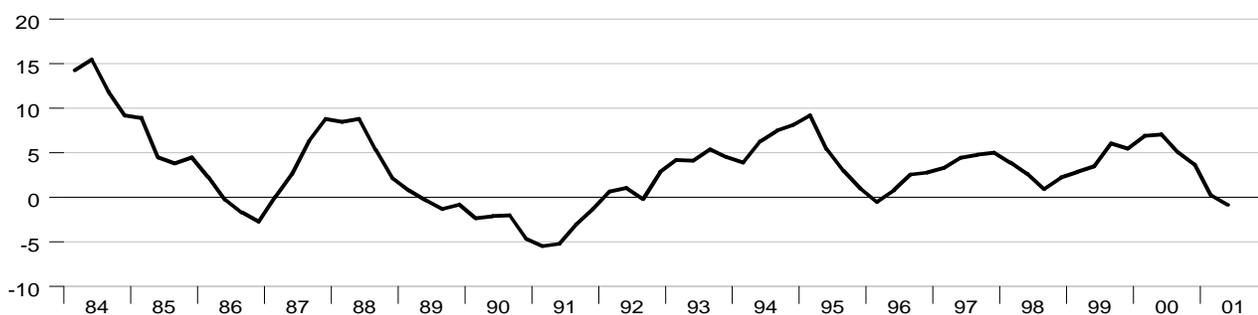
GDP Growth

Percent change



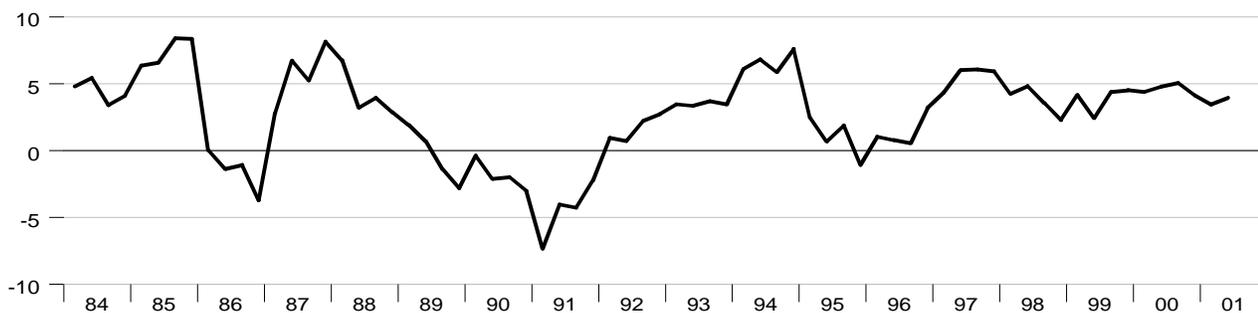
Industrial Production

Percent change



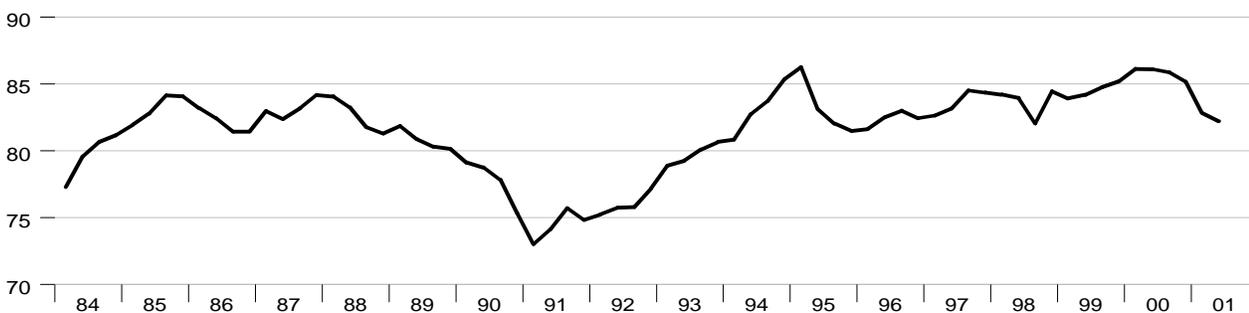
Retail Sales

Percent change



Capacity Utilization

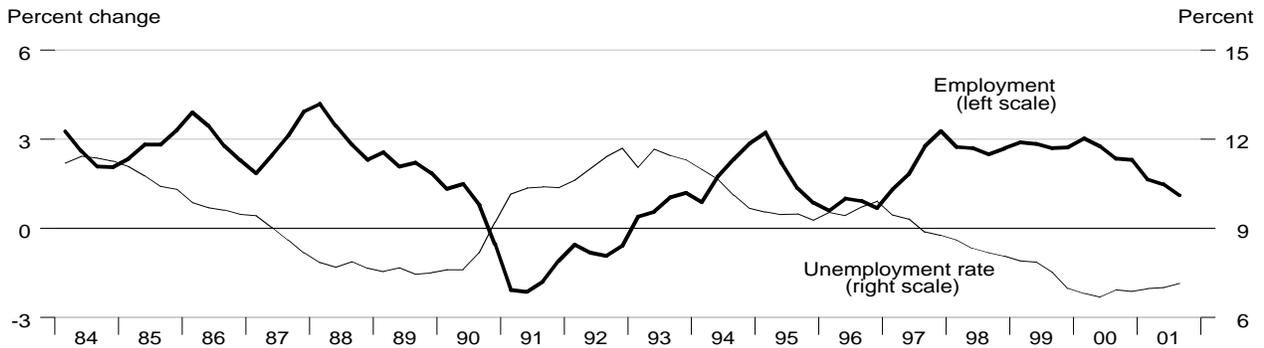
Percent



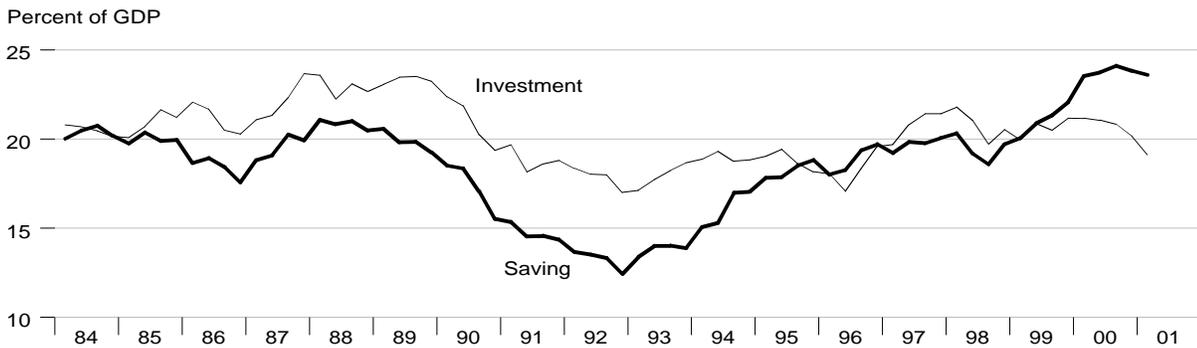
Hourly Earnings and Output per Worker



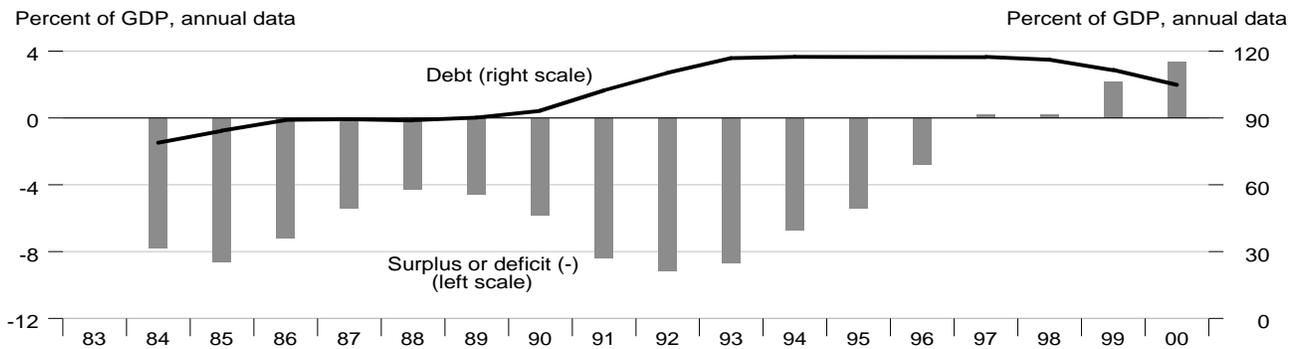
Labor Force Indicators



Saving and Investment

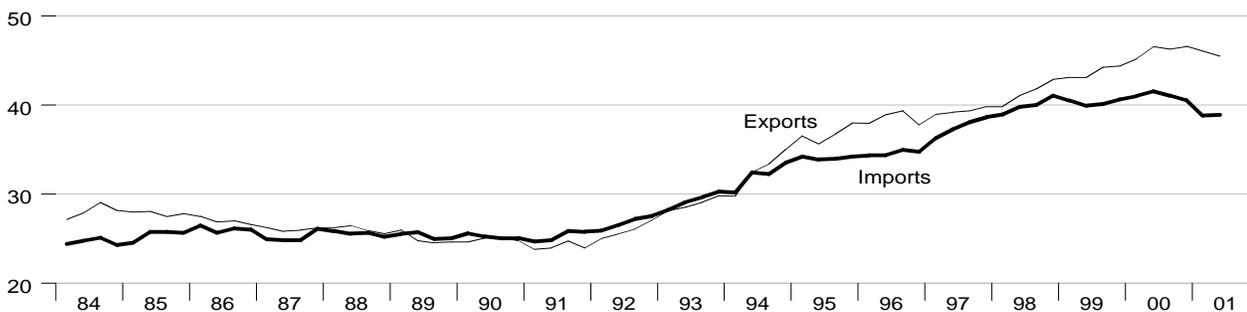


Government Debt and Budget Surplus or Deficit (-)



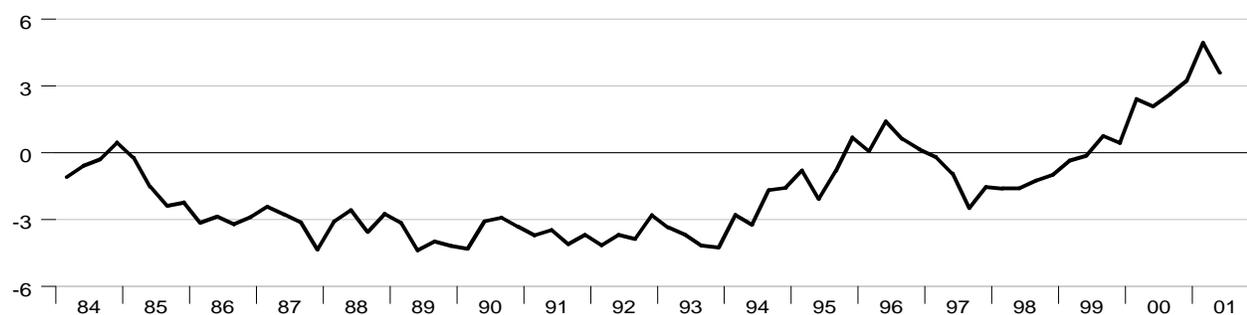
International Trade - Goods and Services

Percent of GDP



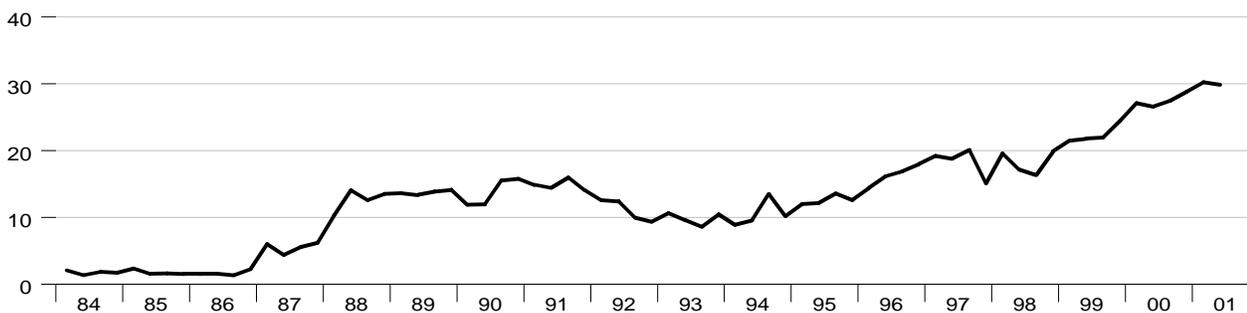
Current Account Balance

Percent of GDP



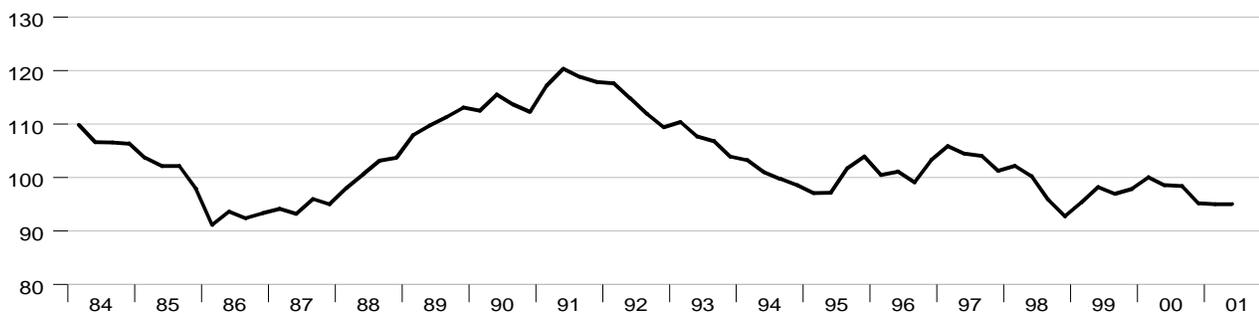
Foreign Exchange Reserves

Billions of US\$



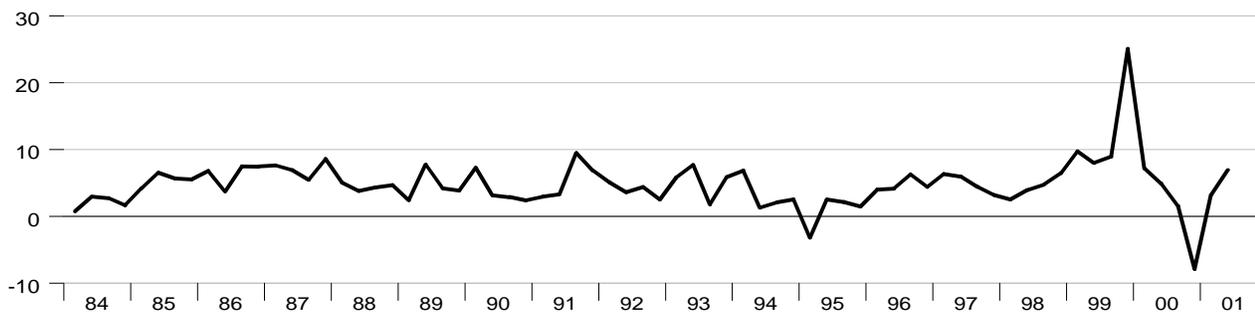
Real Effective Exchange Rate

Index 1995 = 100



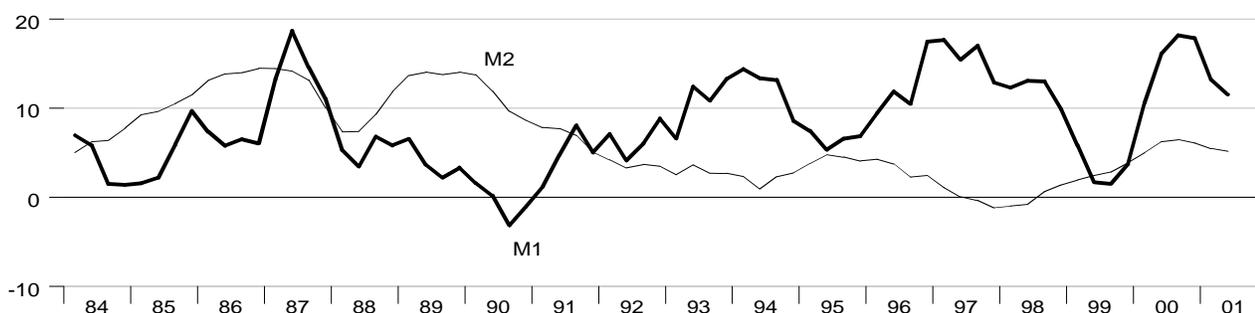
Reserve Money Growth

Percent change



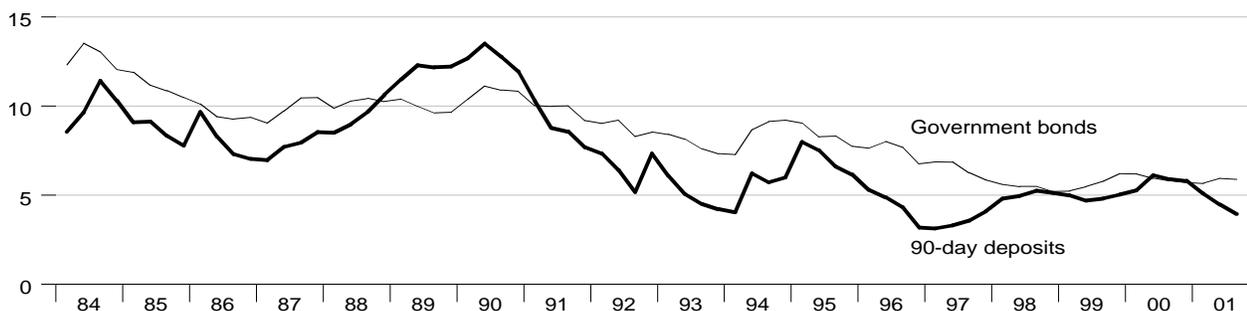
Monetary Aggregates

Percent change



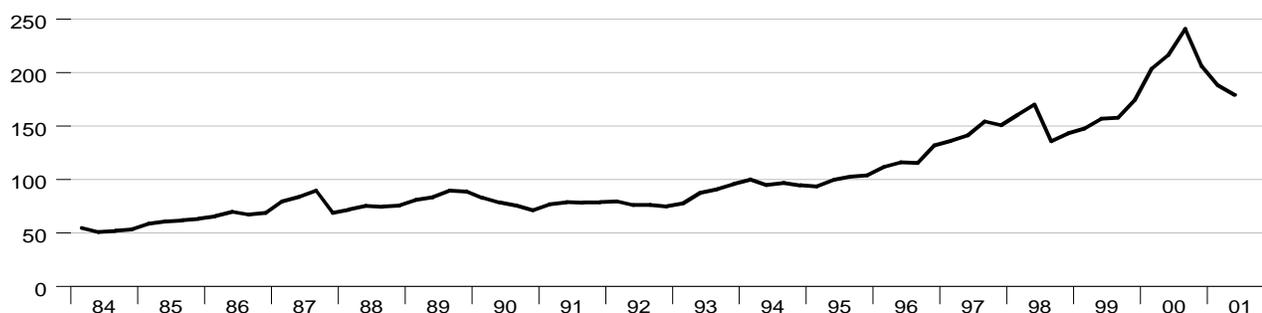
Interest Rates

Percent

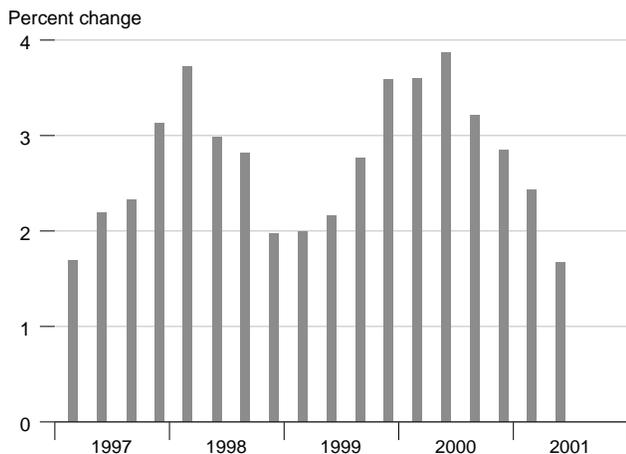


Stock Exchange Index - Toronto Stock Exchange

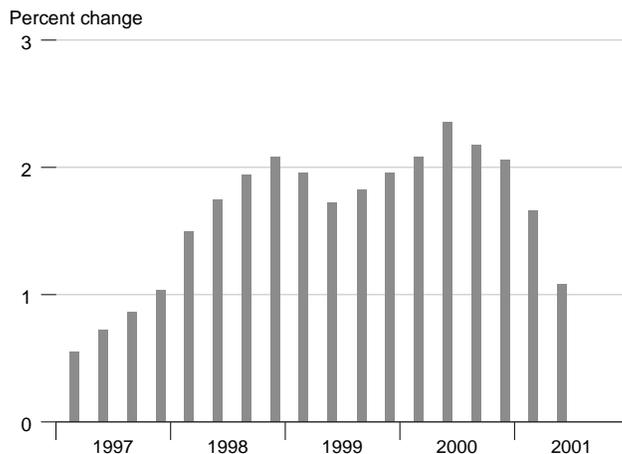
1995 = 100



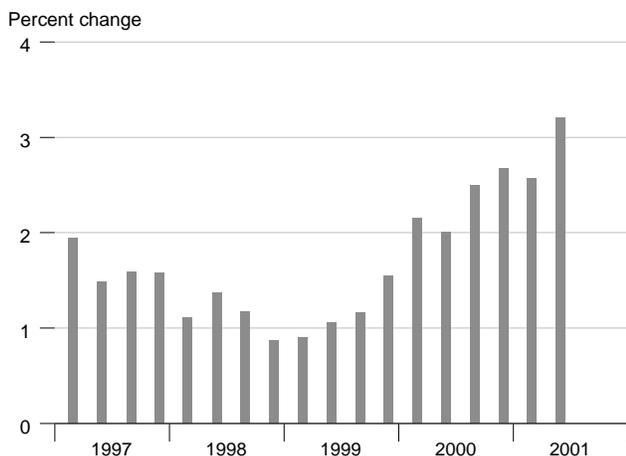
Real GDP Growth



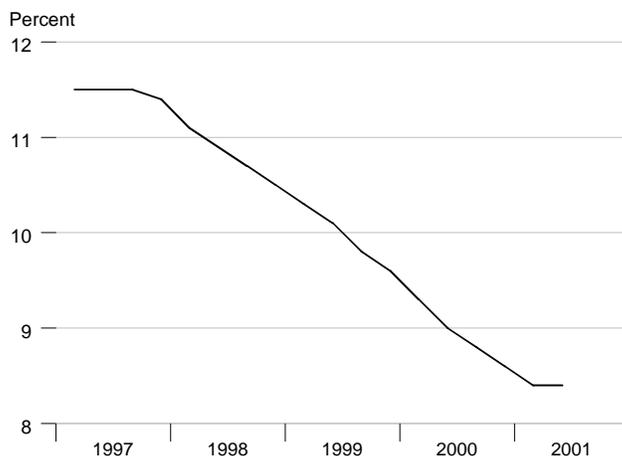
Employment Growth



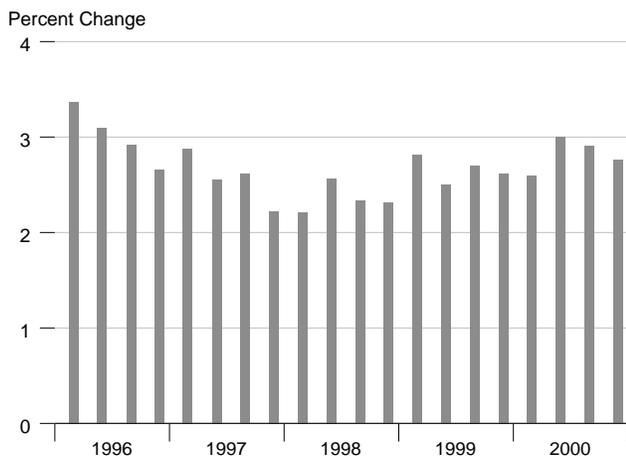
Consumer Price Index



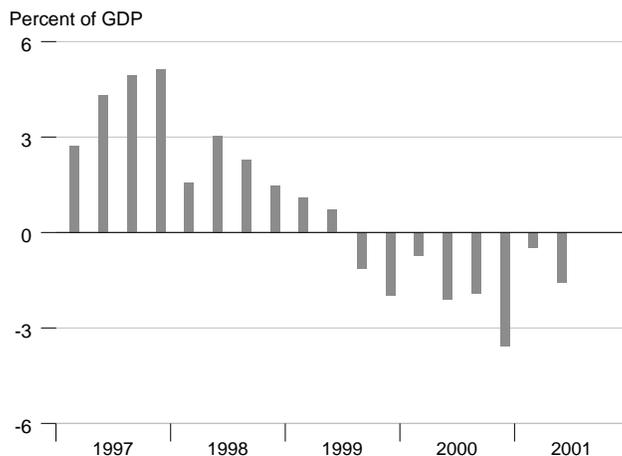
Unemployment Rate



Hourly Earnings

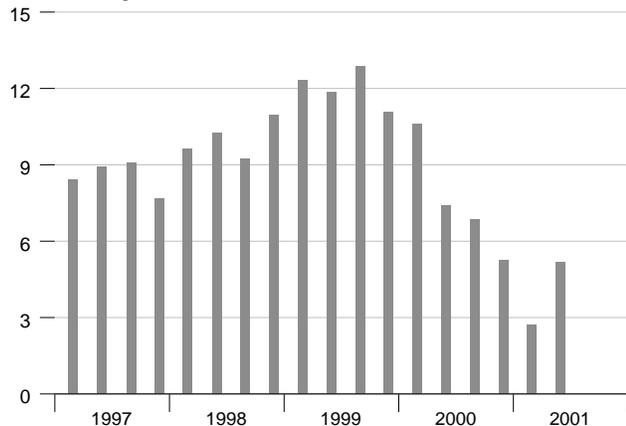


Current Account Balance



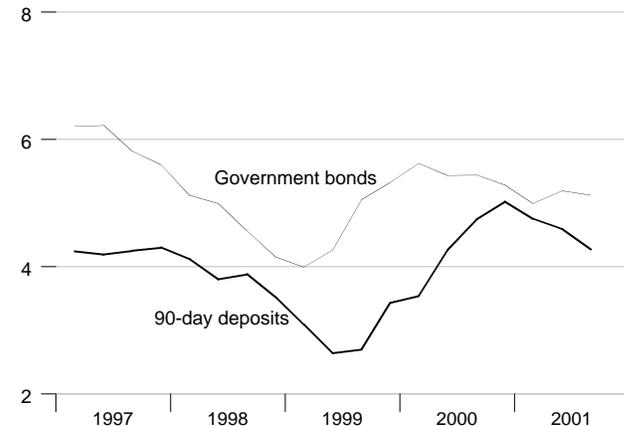
M1 Growth

Percent change



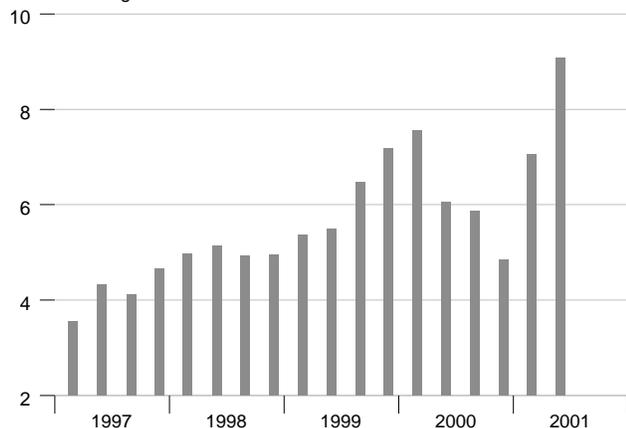
Interest Rates

Percent



M3 Growth

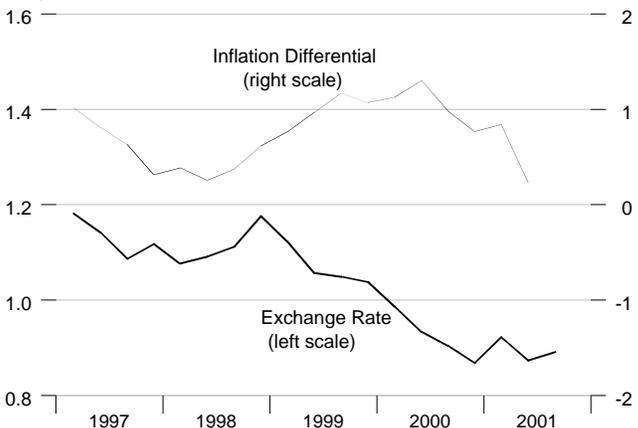
Percent change



Exchange Rate and Inflation Differential

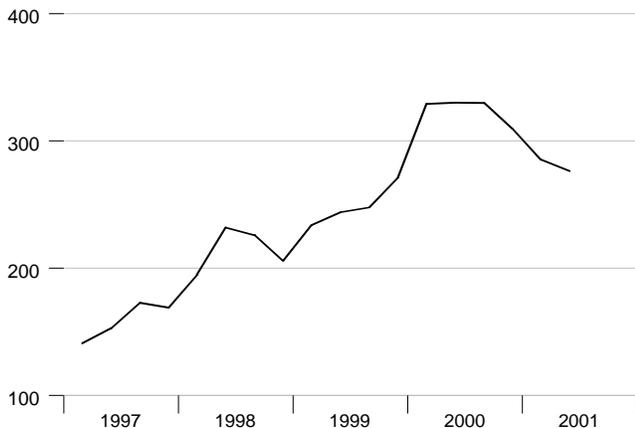
US\$/Euro

Percent



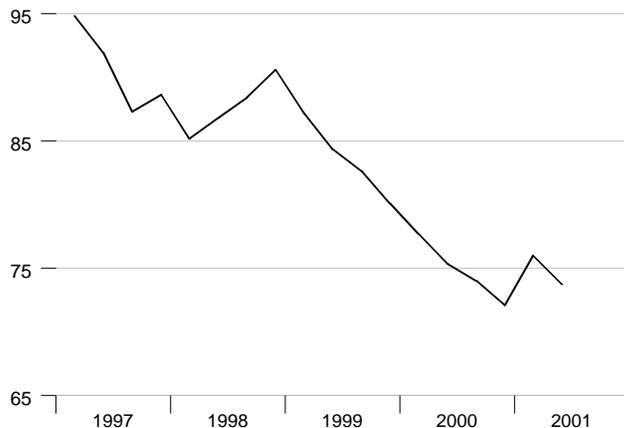
Stock Exchange Index - Dow Jones EURO STOXX SM

1995 = 100

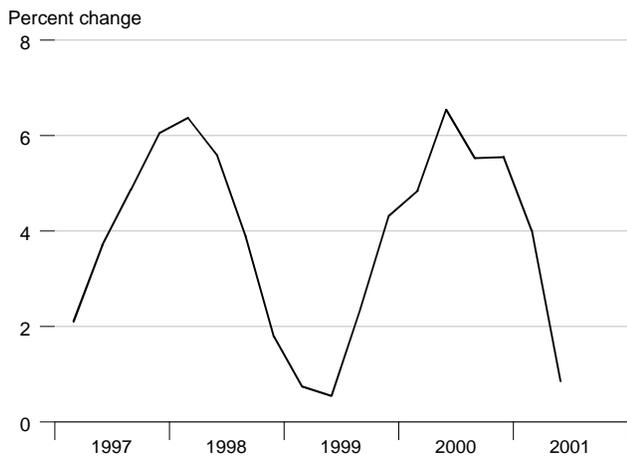


Real Effective Exchange Rate

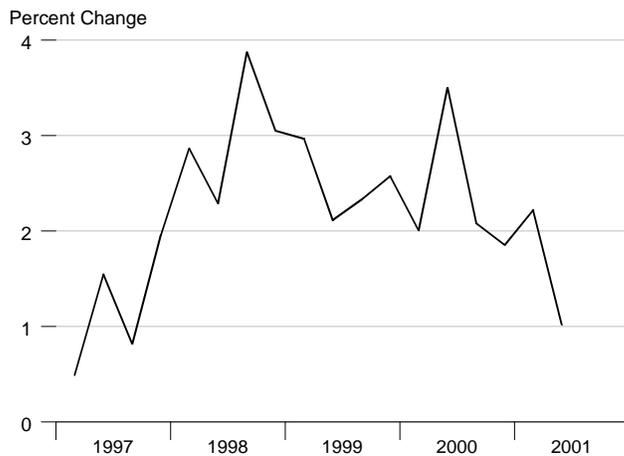
Index 1995 = 100



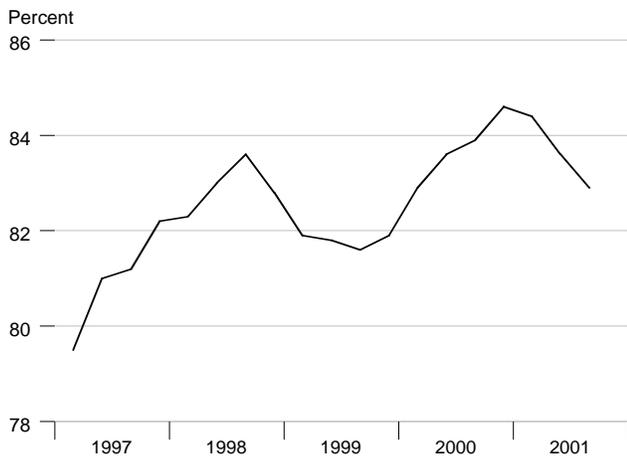
Industrial Production



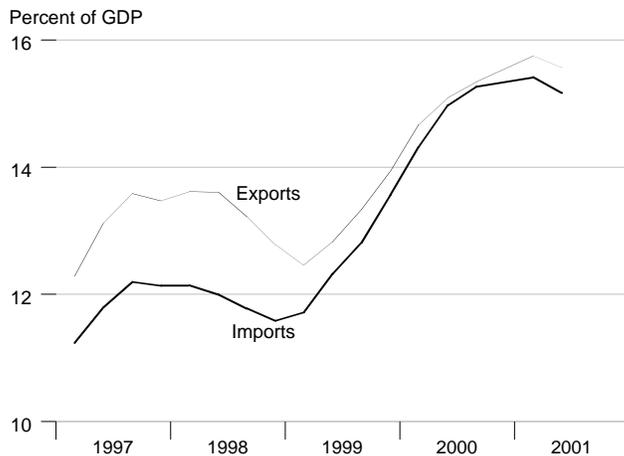
Retail Sales



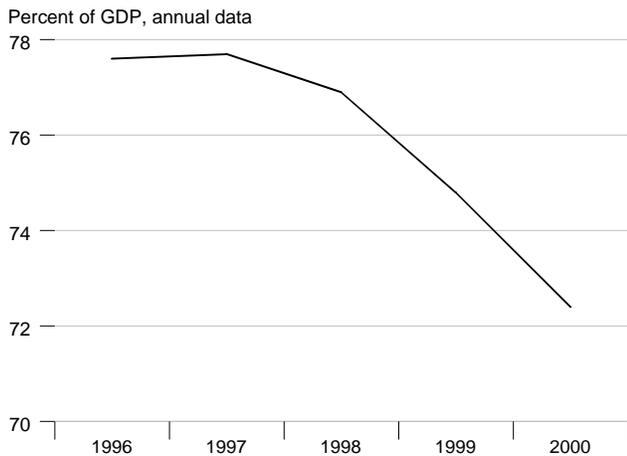
Capacity Utilization



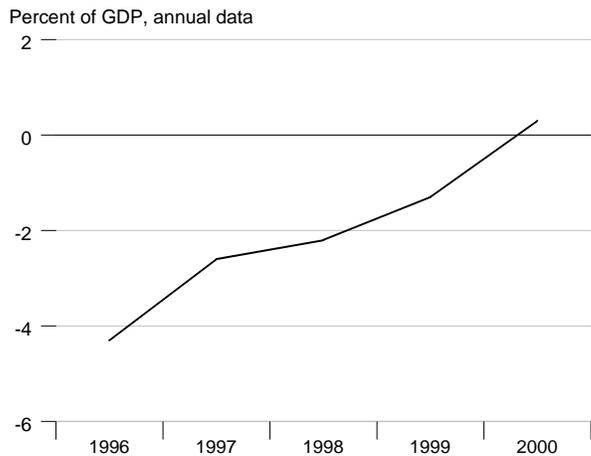
International Trade - Goods



Government Debt

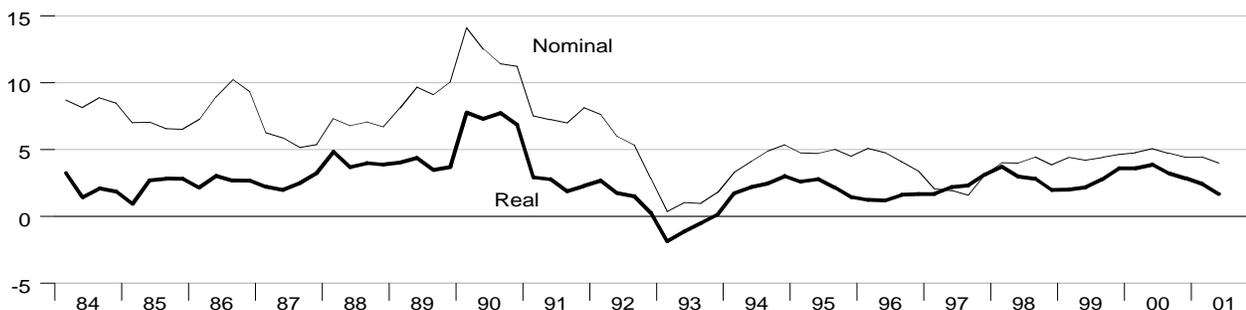


Budget Surplus or Deficit (-)



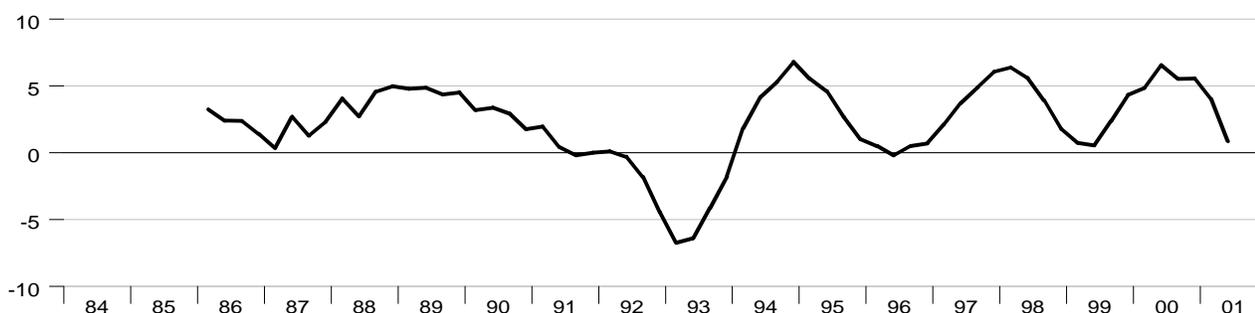
GDP Growth

Percent change



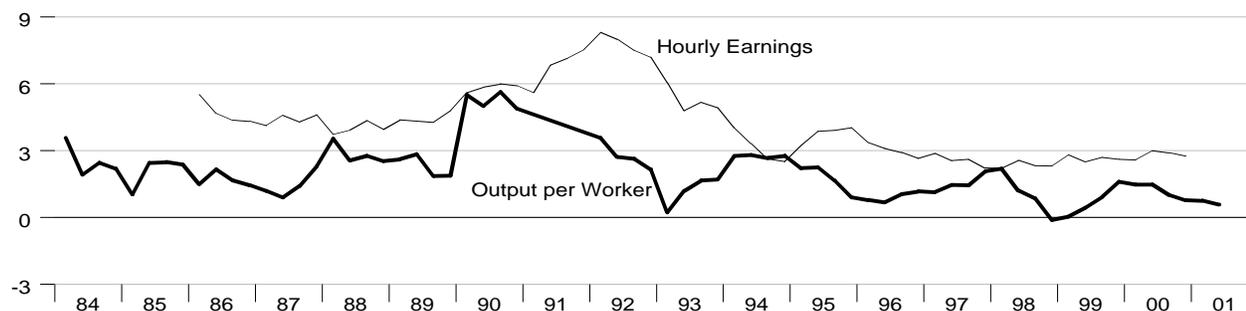
Industrial Production

Percent change



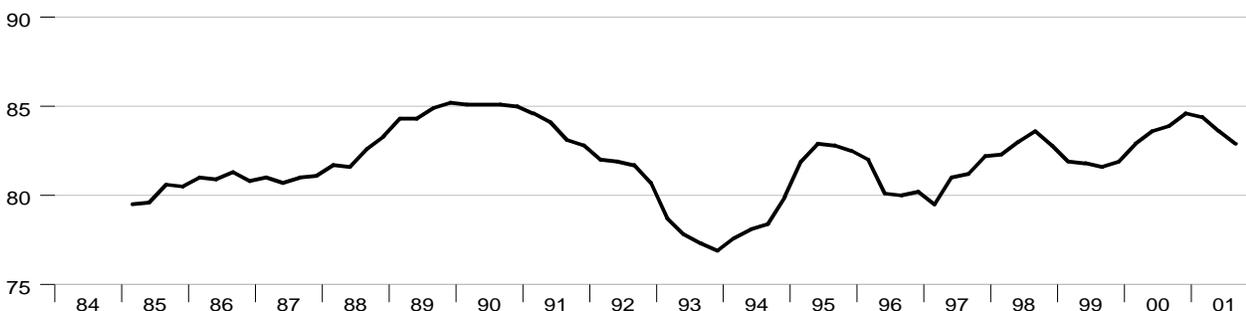
Hourly Earnings and Output per Worker

Percent change

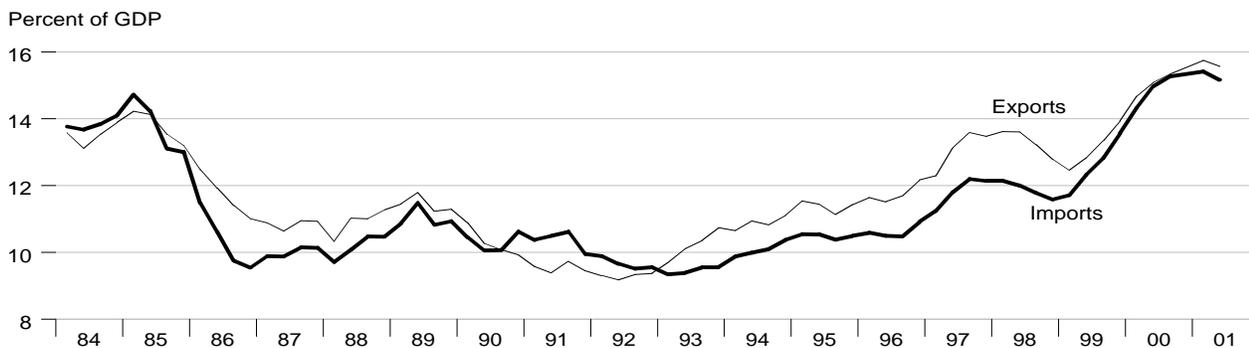


Capacity Utilization

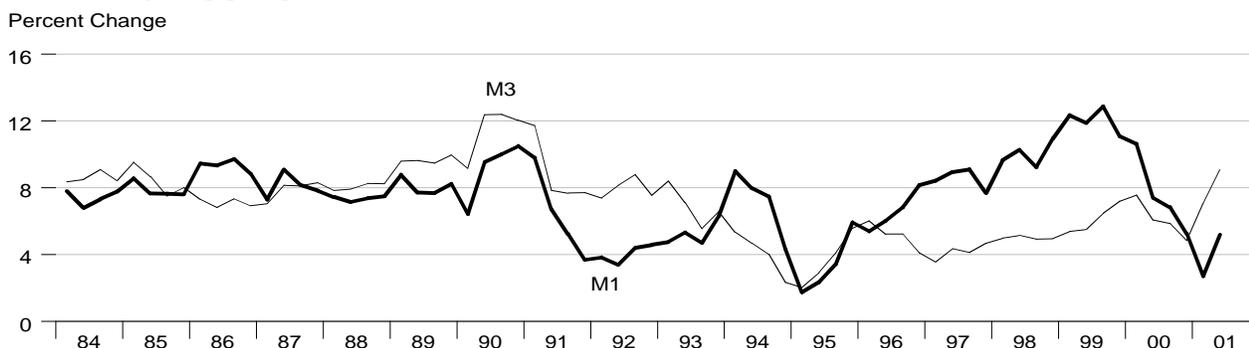
Percent



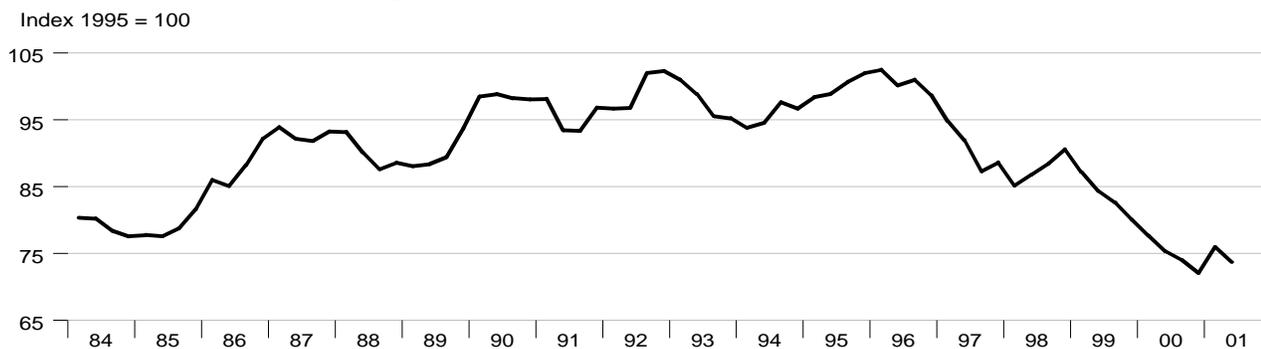
International Trade - Goods



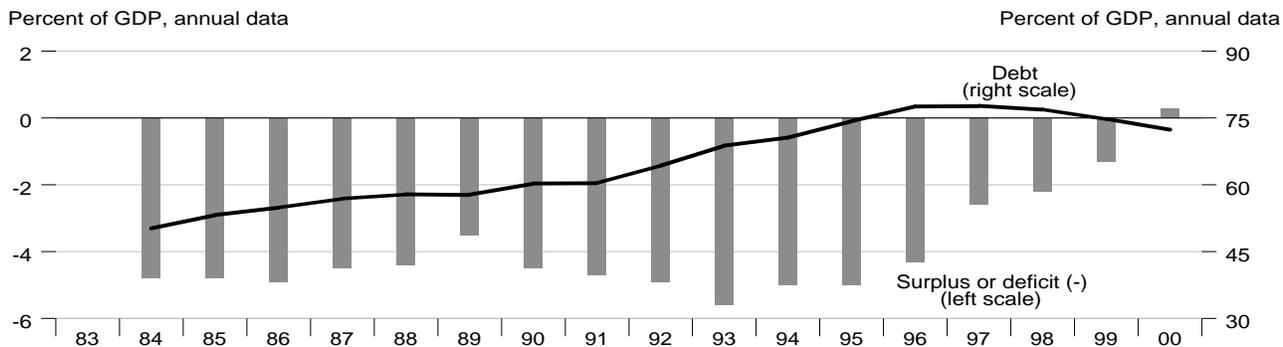
Monetary Aggregates



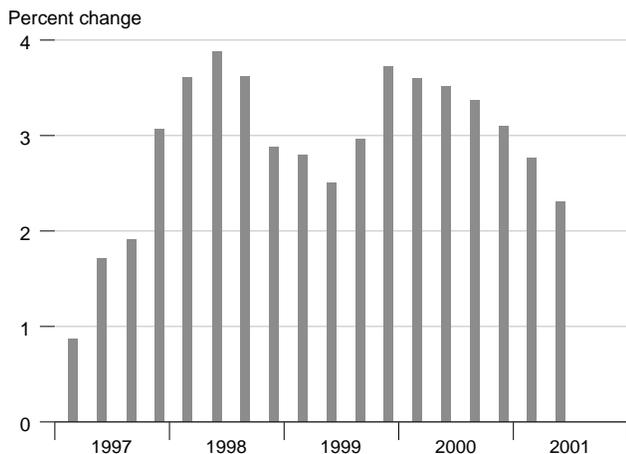
Real Effective Exchange Rate



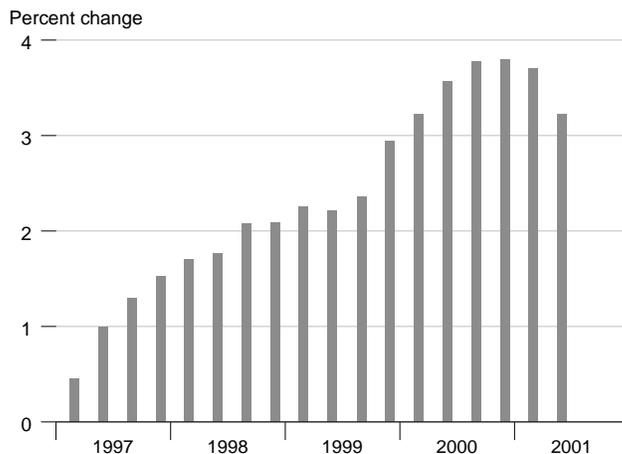
Government Debt and Budget Surplus or Deficit (-)



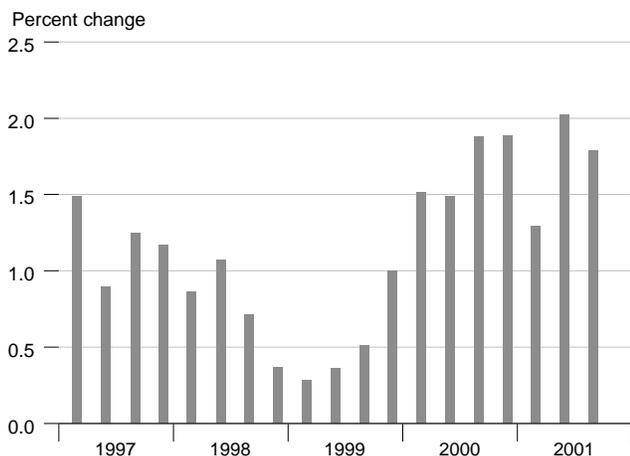
Real GDP Growth



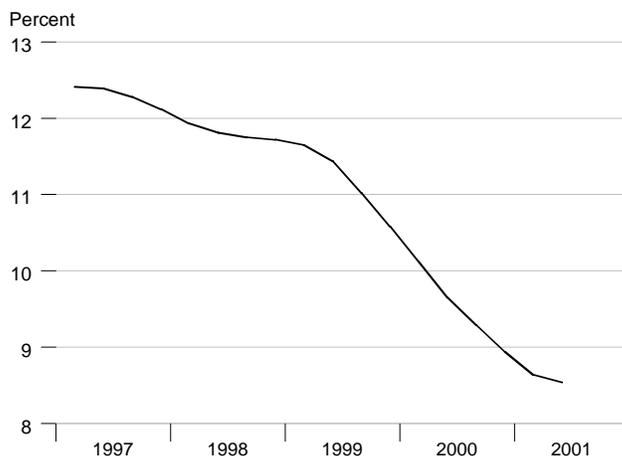
Employment Growth



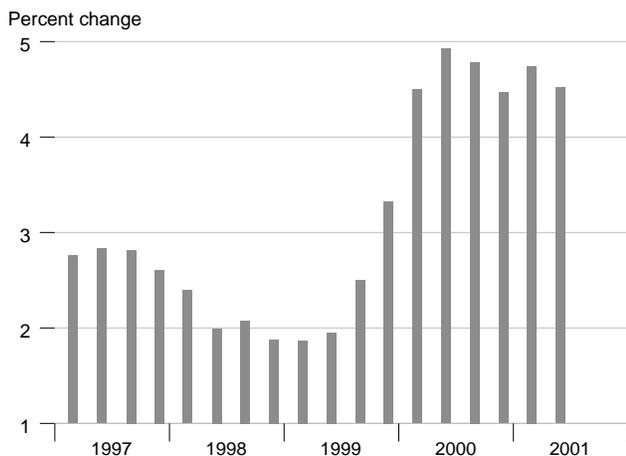
Consumer Price Index



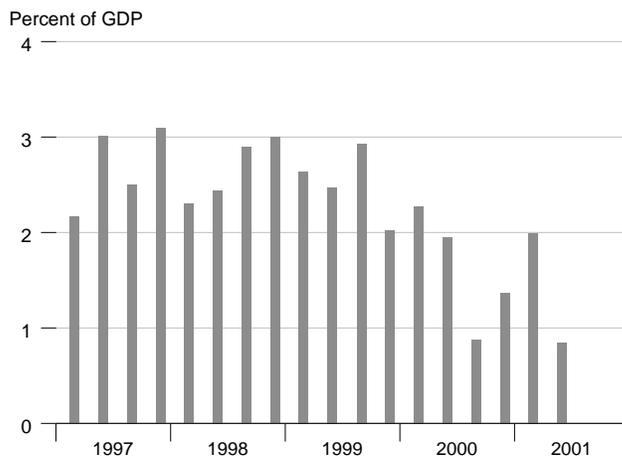
Unemployment Rate



Hourly Earnings

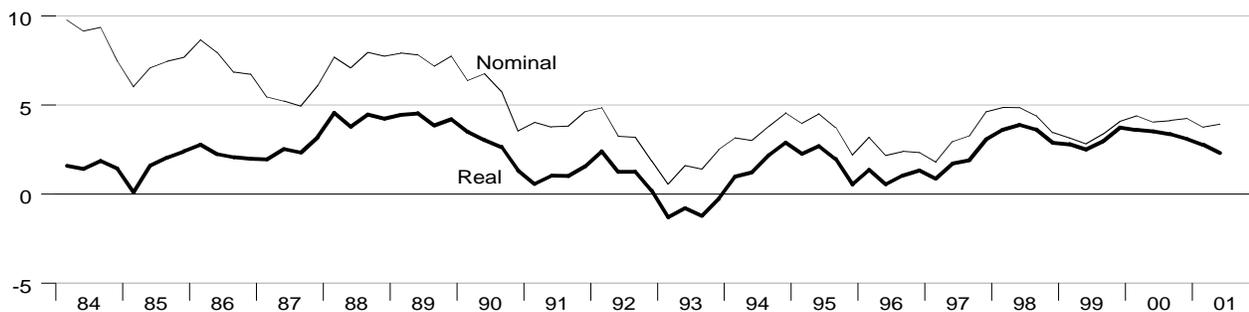


Current Account Balance



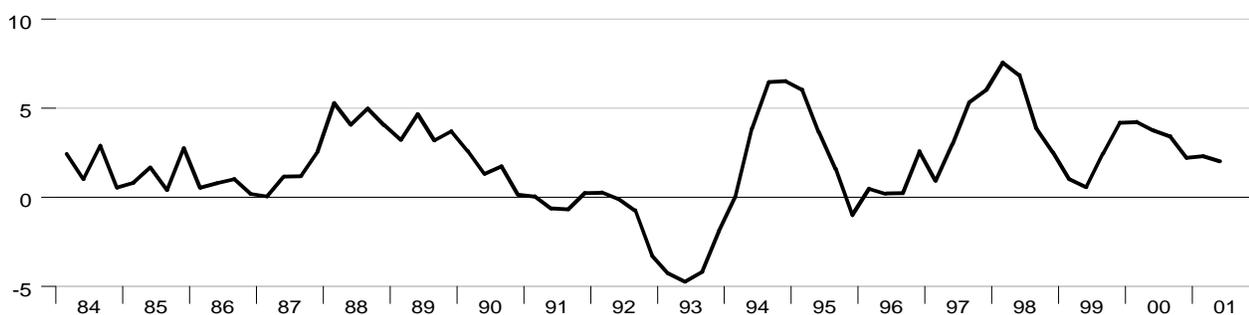
GDP Growth

Percent change



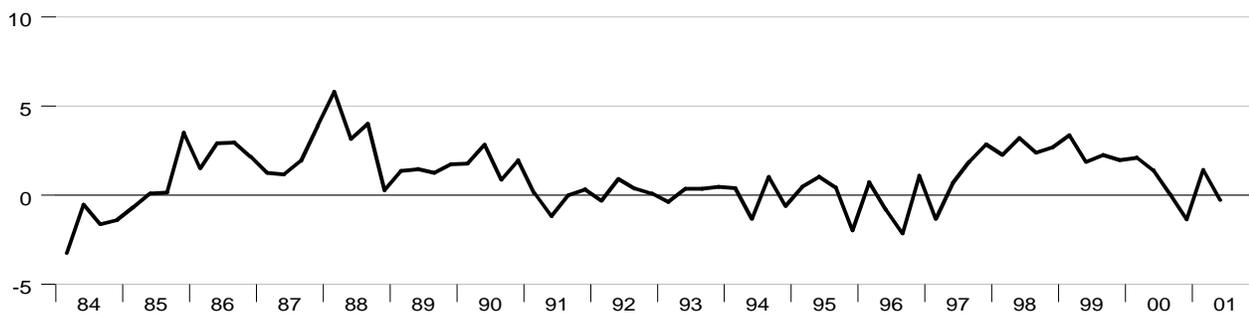
Industrial Production

Percent change



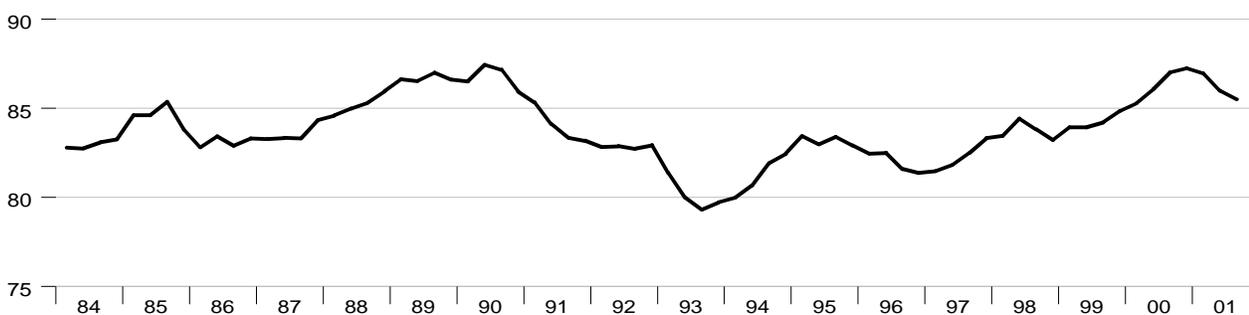
Retail Sales

Percent change

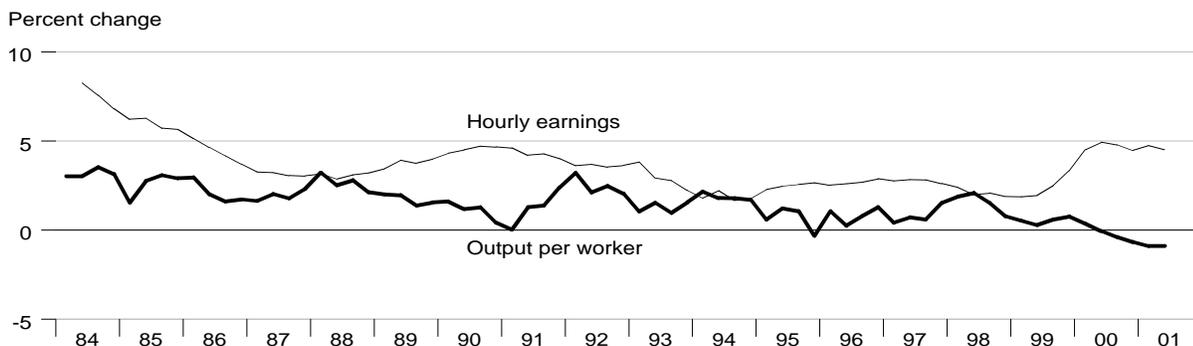


Capacity Utilization

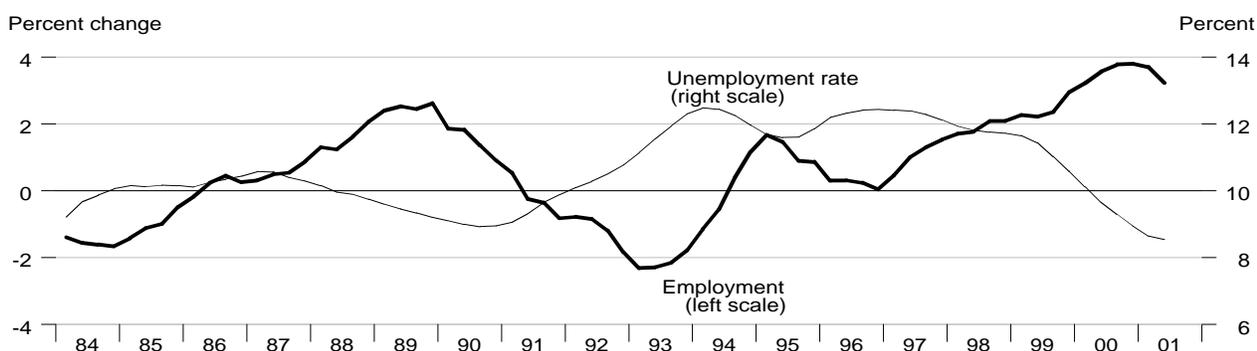
Percent



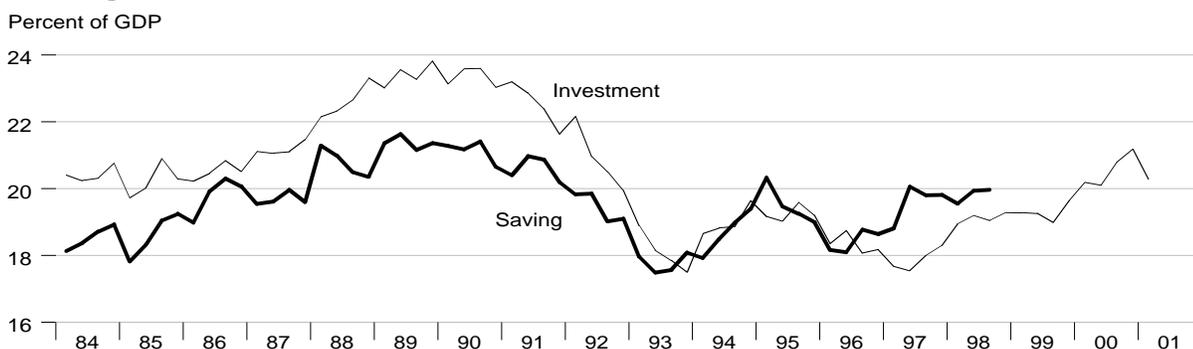
Hourly Earnings and Output per Worker



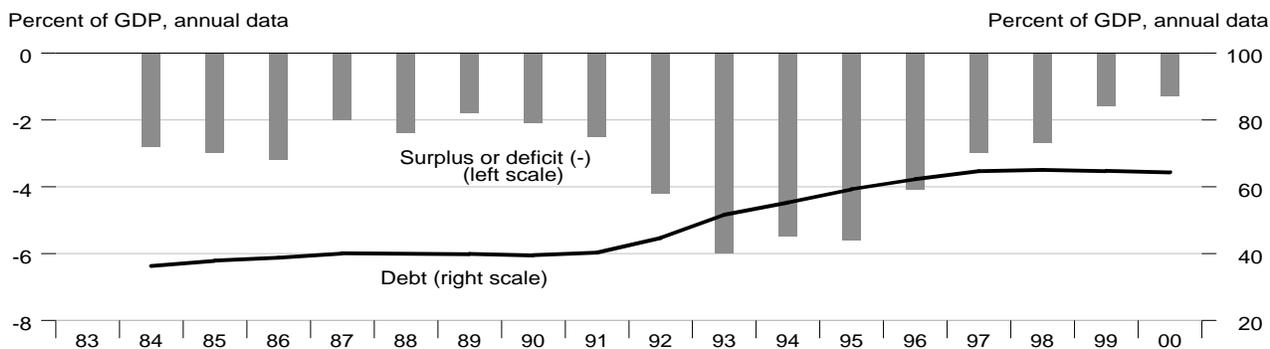
Labor Force Indicators



Saving and Investment

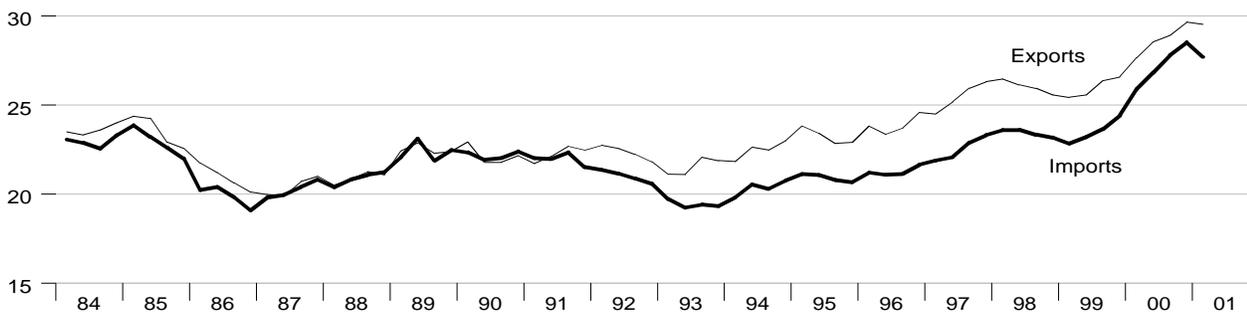


Government Debt and Budget Surplus or Deficit (-)



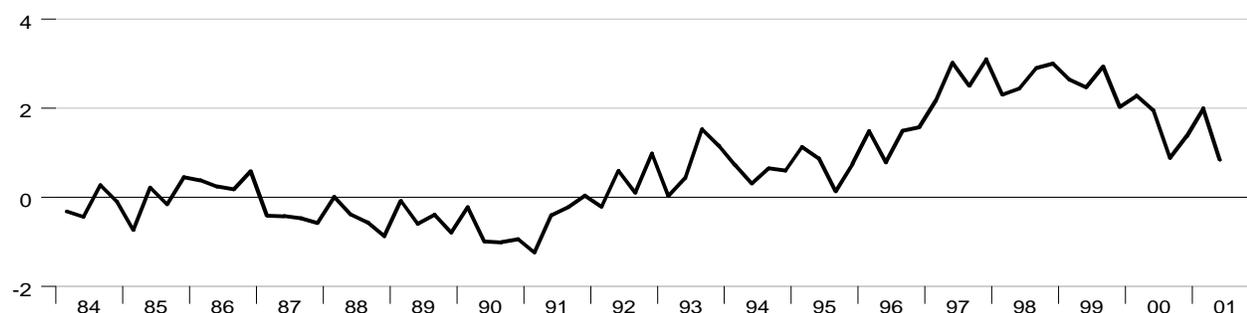
International Trade - Goods and Services

Percent of GDP



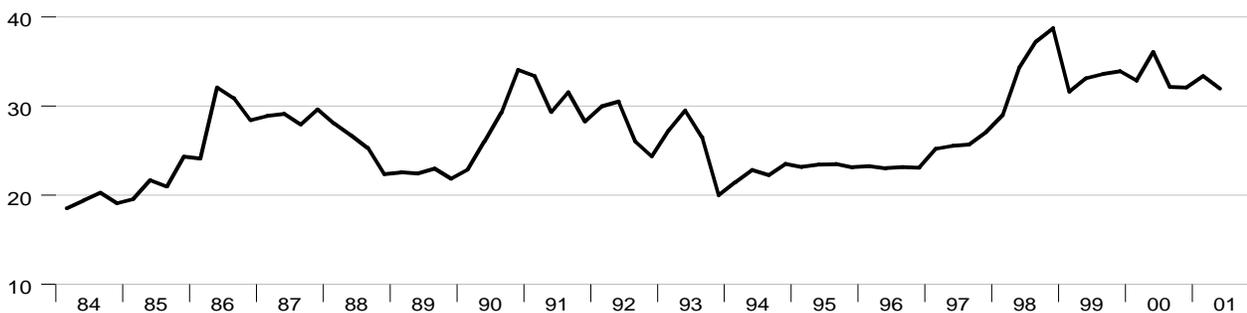
Current Account Balance

Percent of GDP



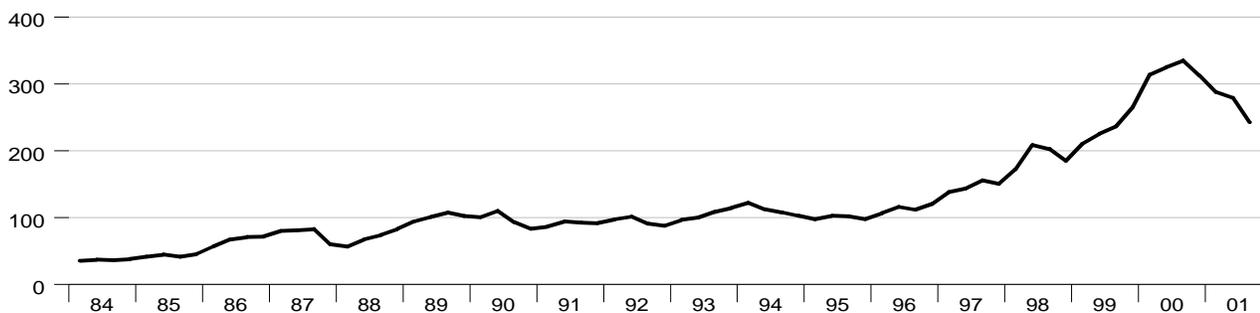
Foreign Exchange Reserves

Billions of US\$



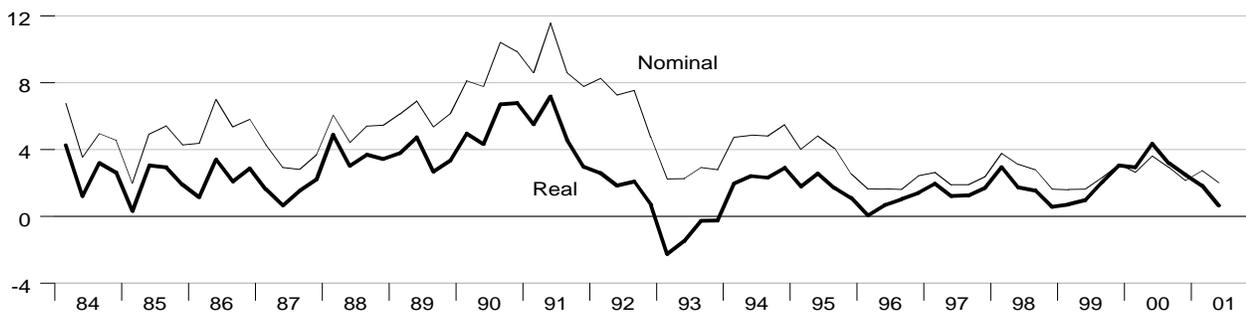
Stock Exchange Index - SBF 250

1995 = 100



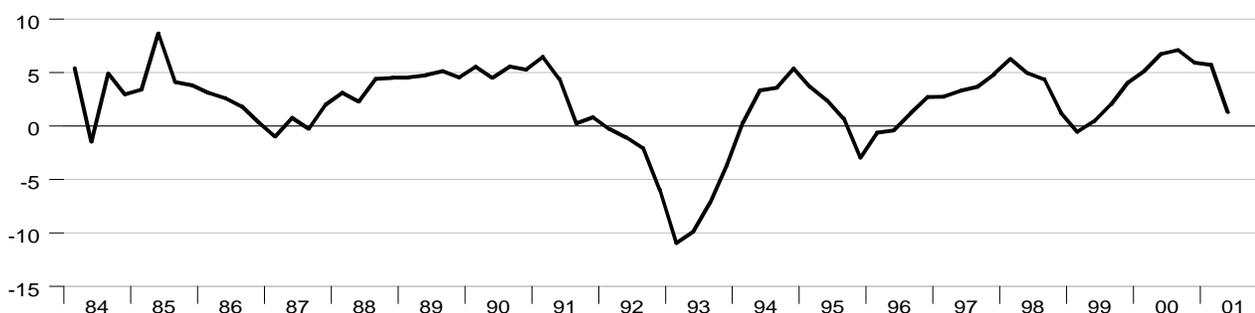
GDP Growth

Percent change



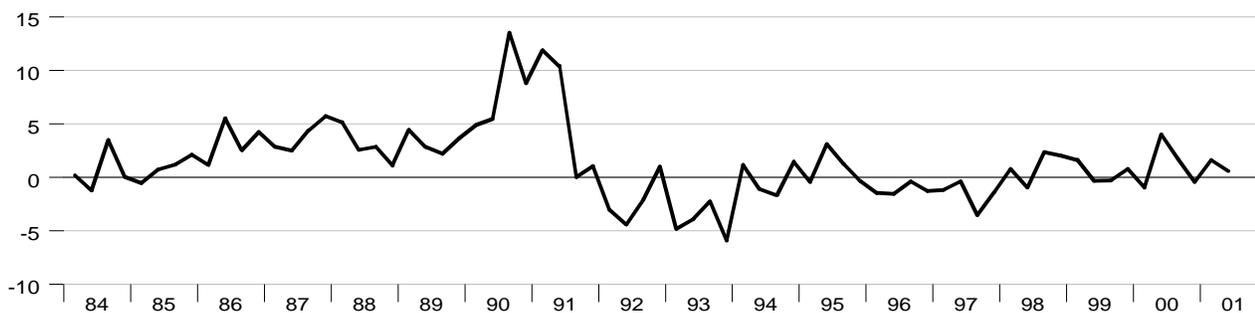
Industrial Production

Percent change



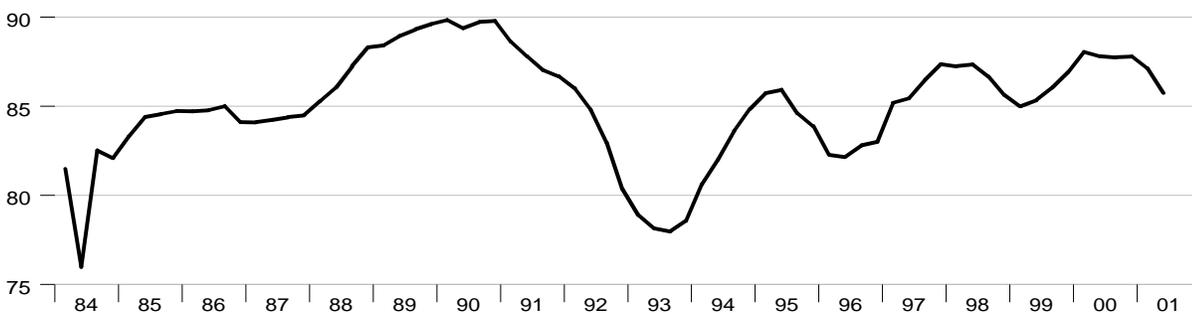
Retail Sales

Percent change

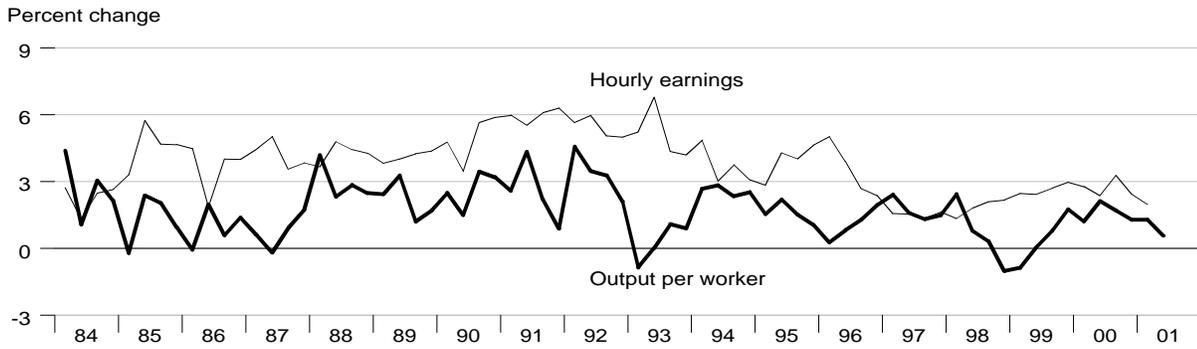


Capacity Utilization

Percent



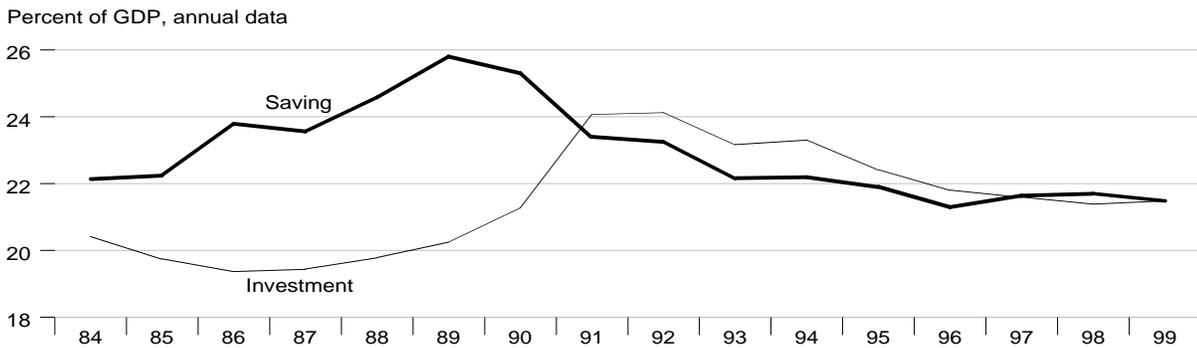
Hourly Earnings and Output per Worker



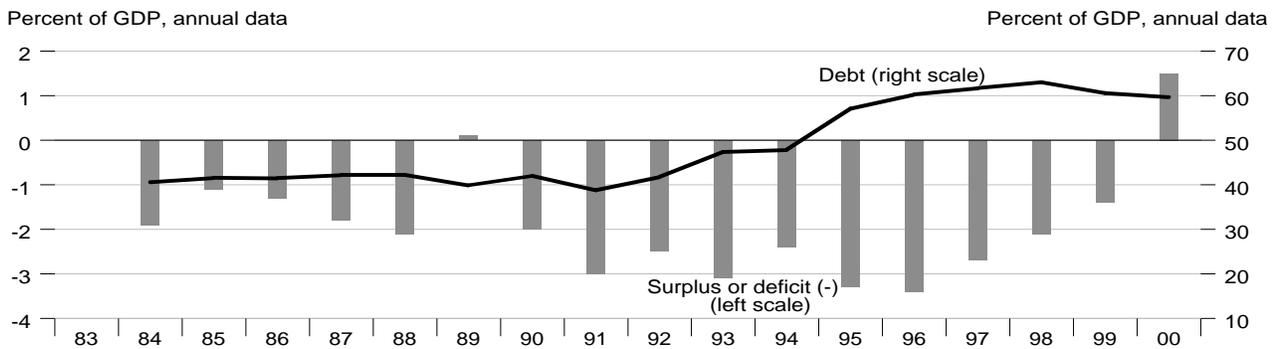
Labor Force Indicators



Saving and Investment

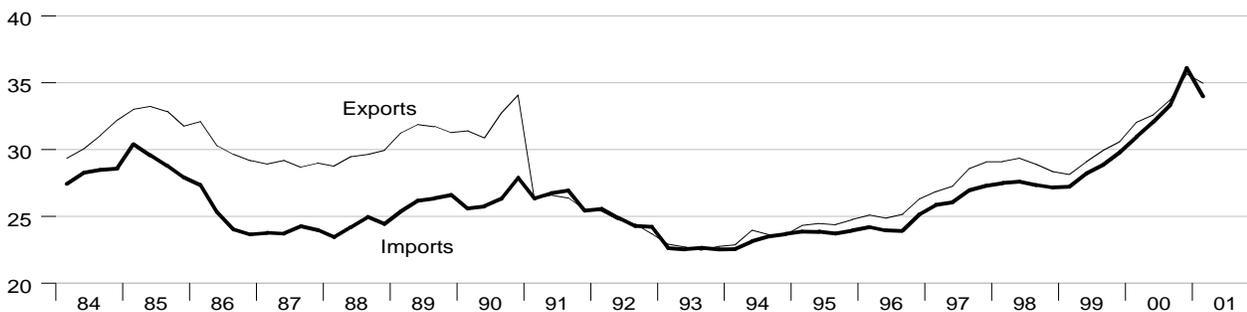


Government Debt and Budget Surplus or Deficit (-)



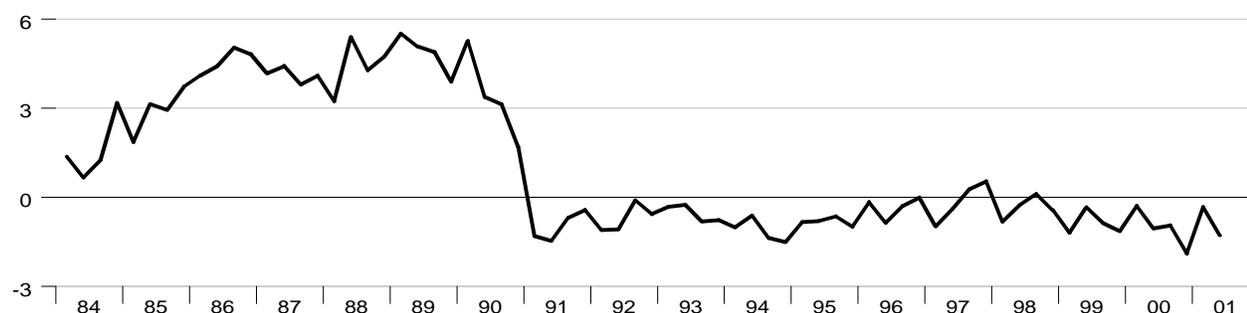
International Trade - Goods and Services

Percent of GDP



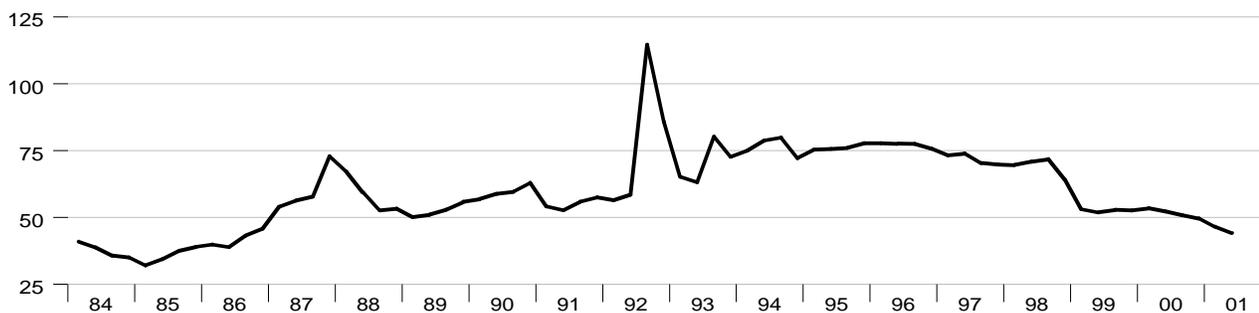
Current Account Balance

Percent of GDP



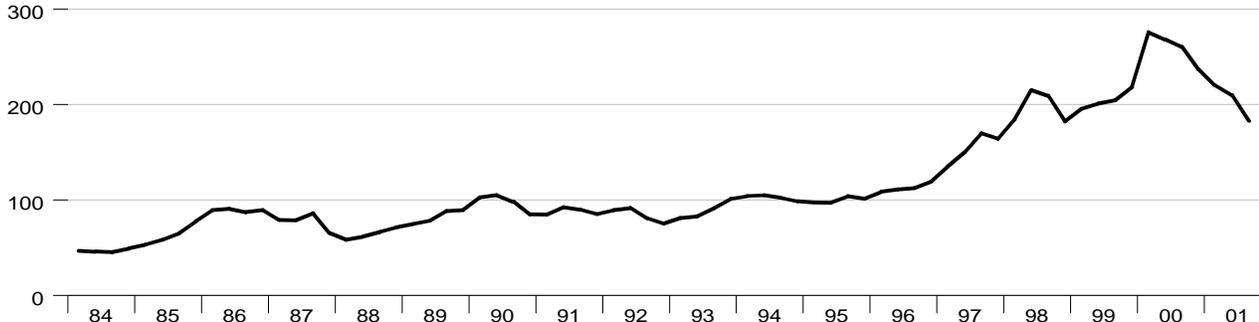
Foreign Exchange Reserves

Billion of US\$

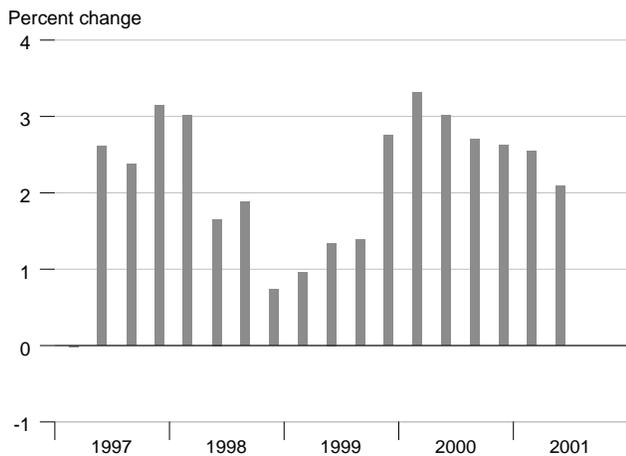


Stock Exchange Index - CDAX

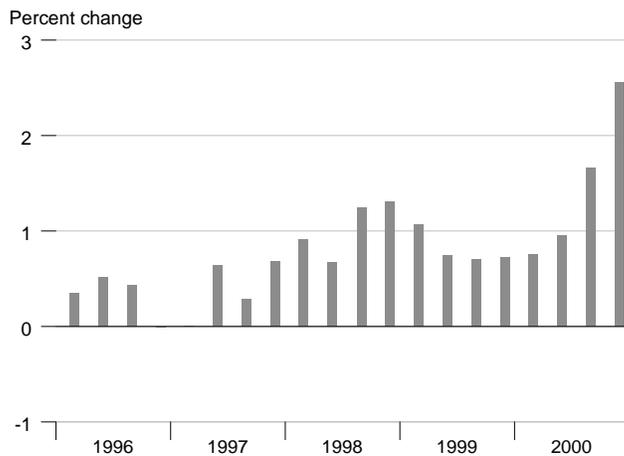
1995 = 100



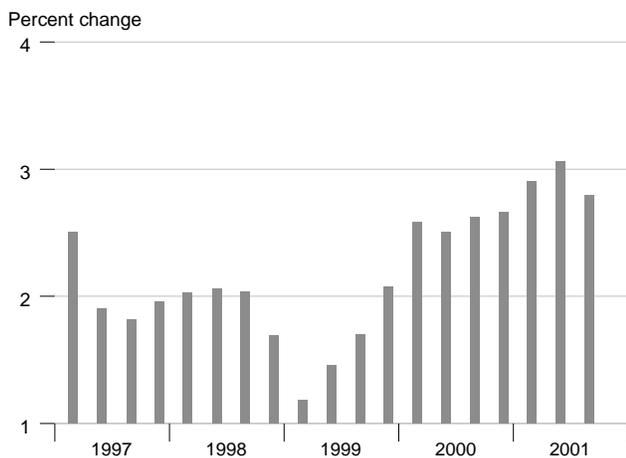
Real GDP Growth



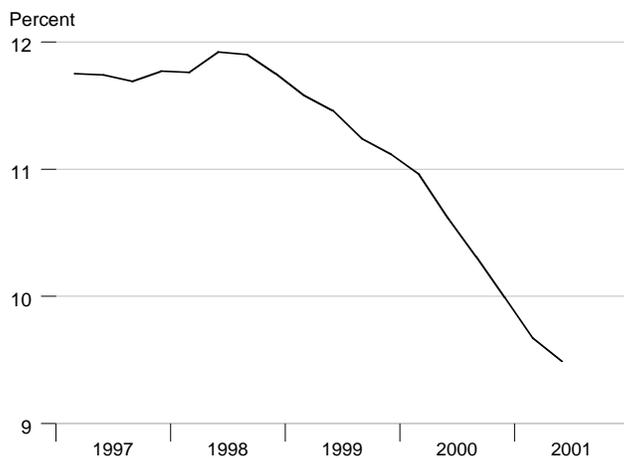
Employment Growth



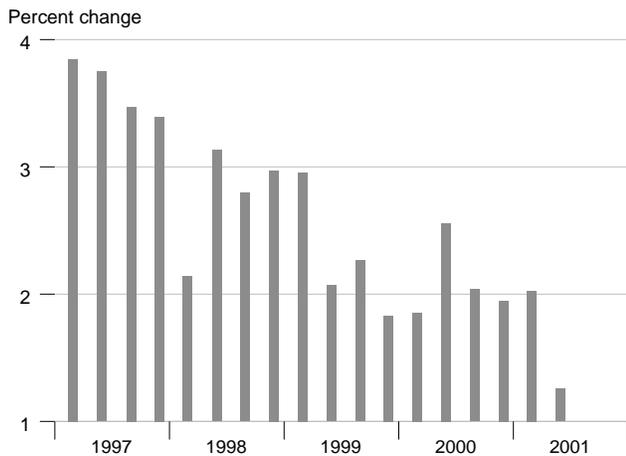
Consumer Price Index



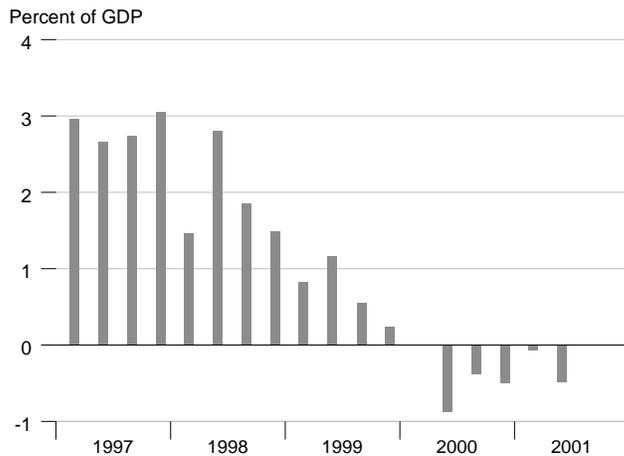
Unemployment Rate



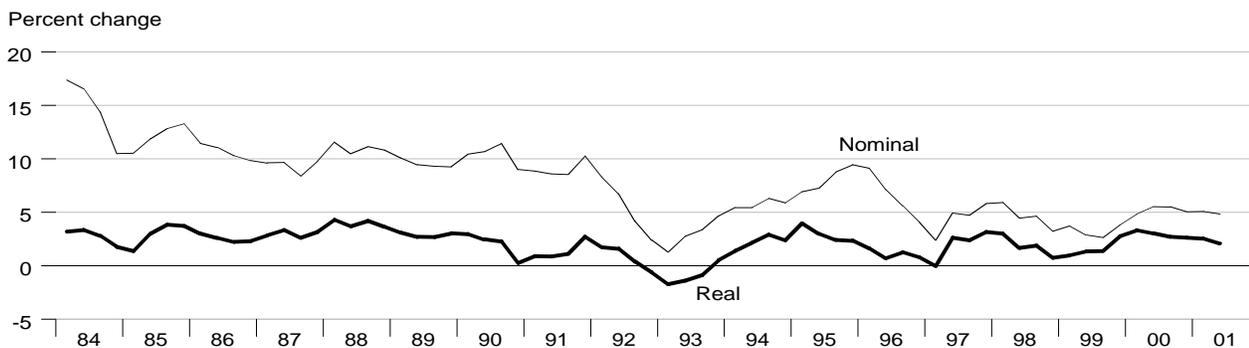
Hourly Earnings



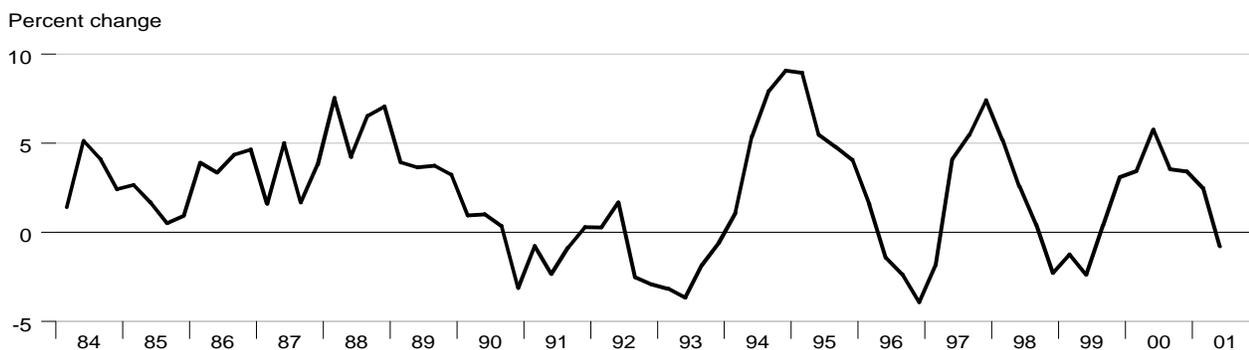
Current Account Balance



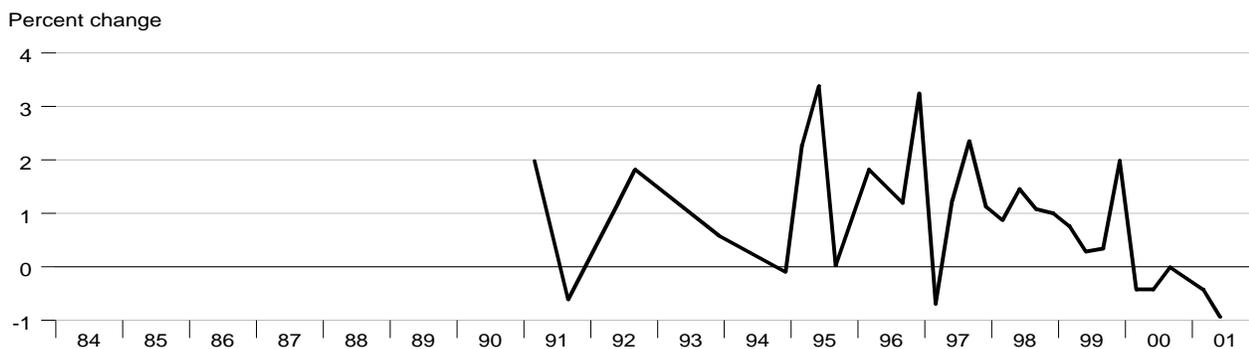
GDP Growth



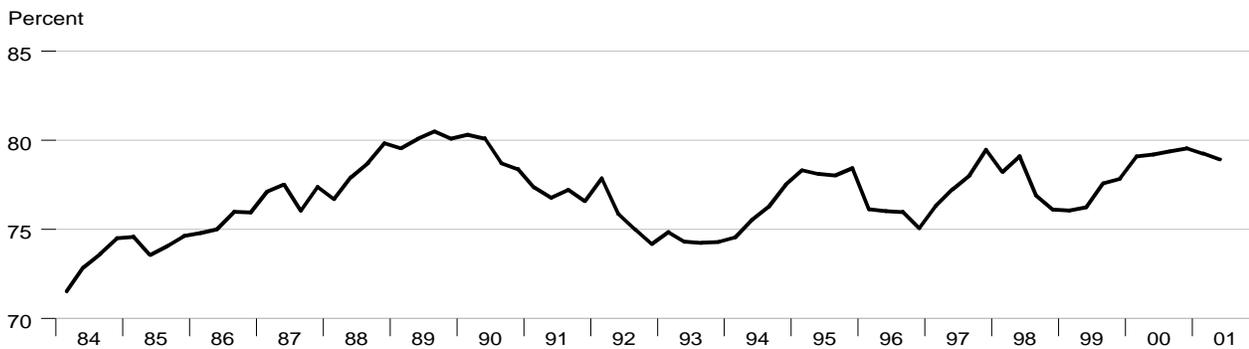
Industrial Production



Retail Sales



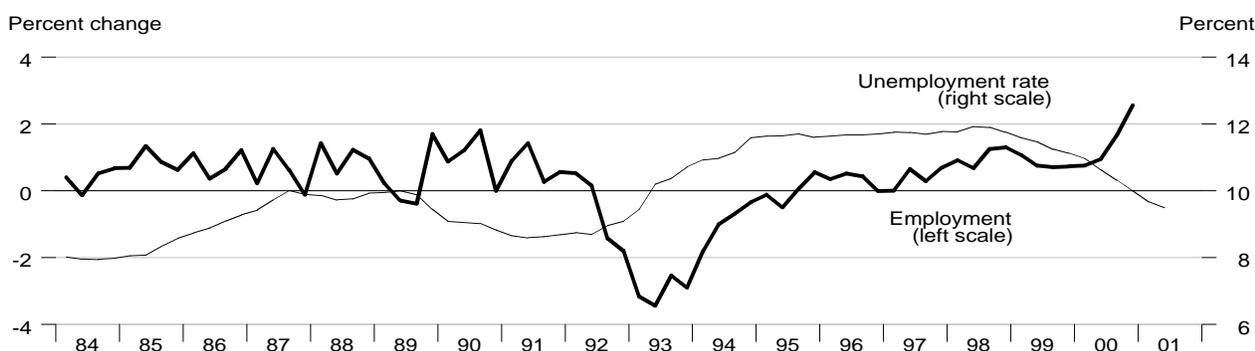
Capacity Utilization



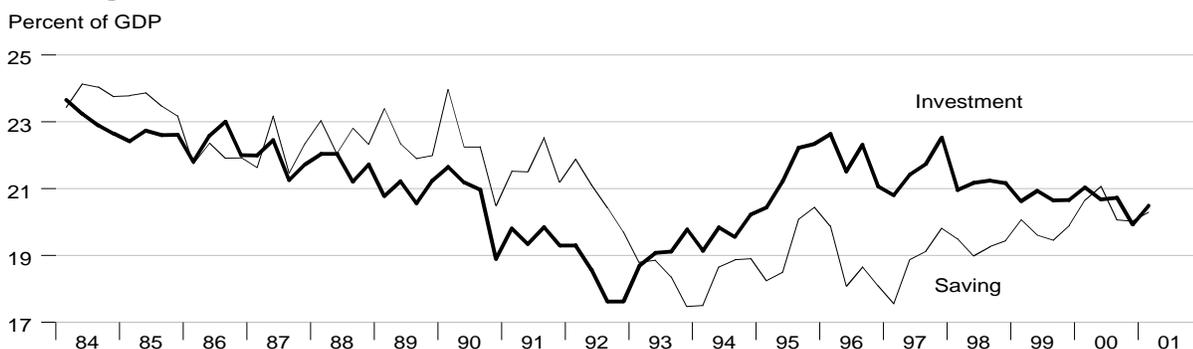
Hourly Earnings and Output per Worker



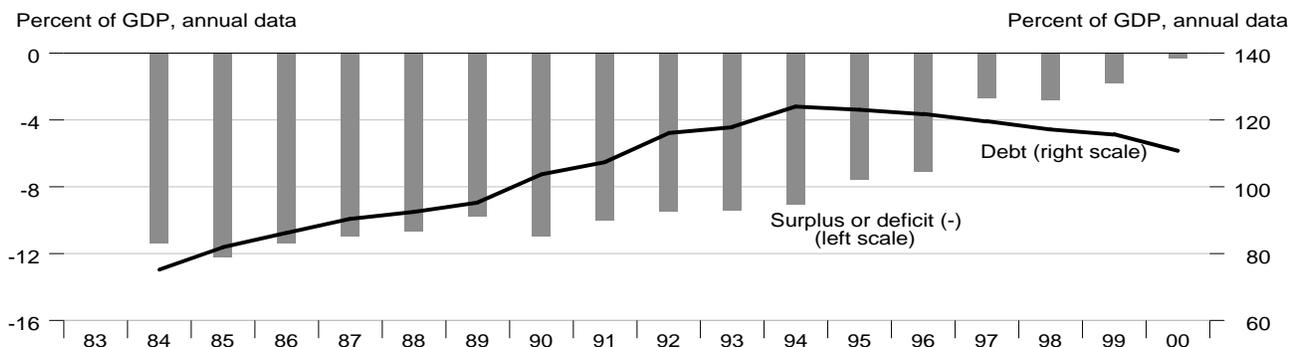
Labor Force Indicators



Saving and Investment

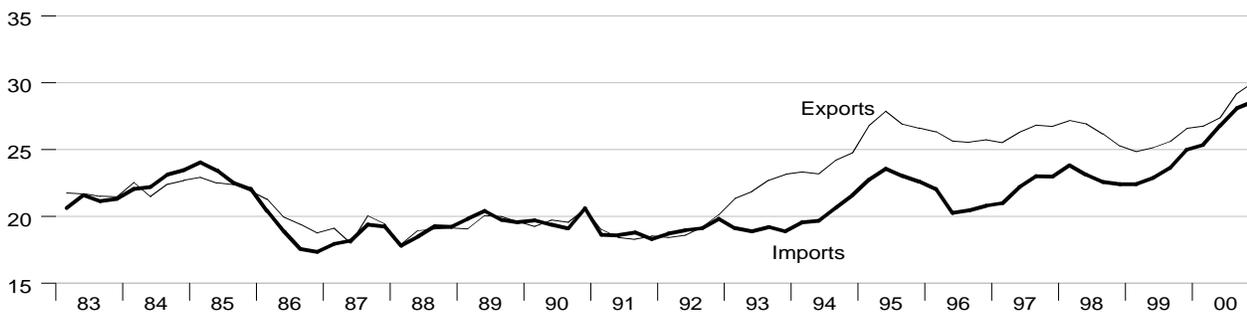


Government Debt and Budget Surplus or Deficit (-)



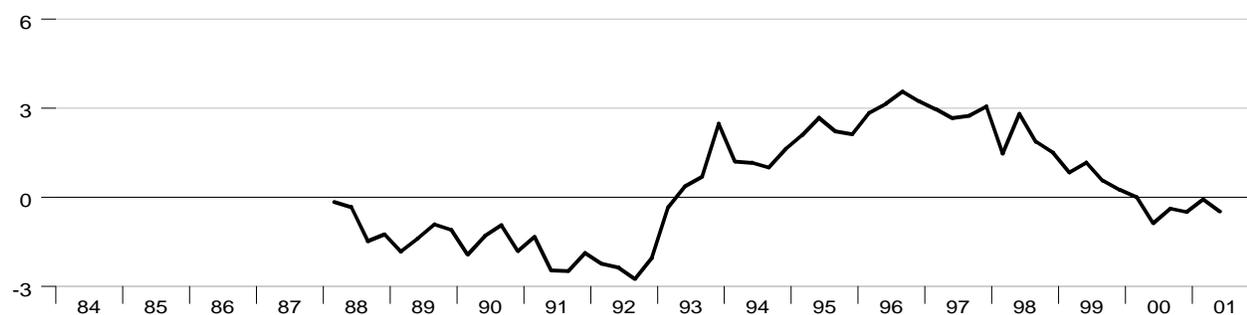
International Trade - Goods and Services

Percent of GDP



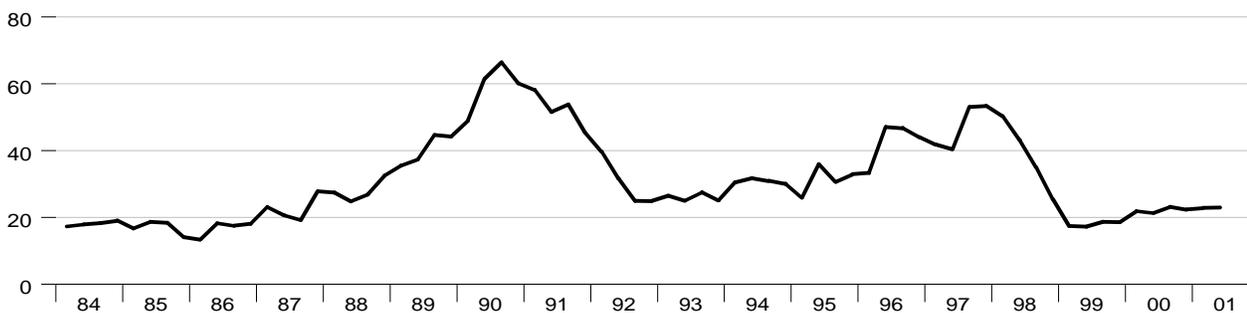
Current Account Balance

Percent of GDP



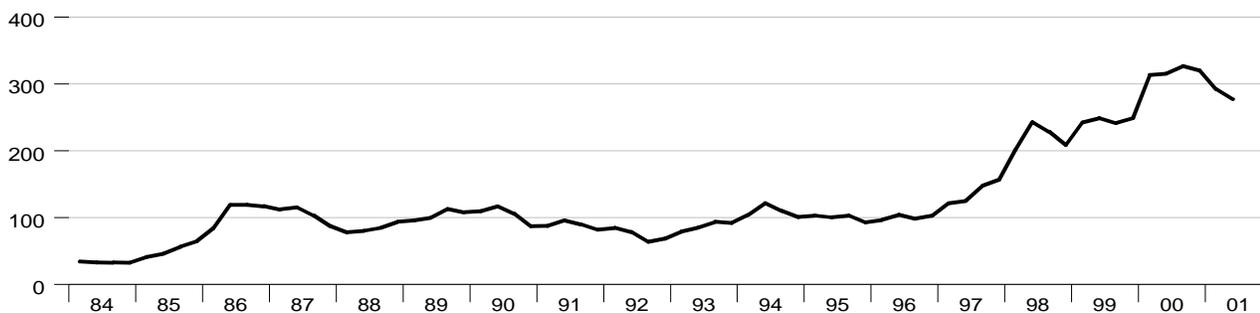
Foreign Exchange Reserves

Billions of US\$

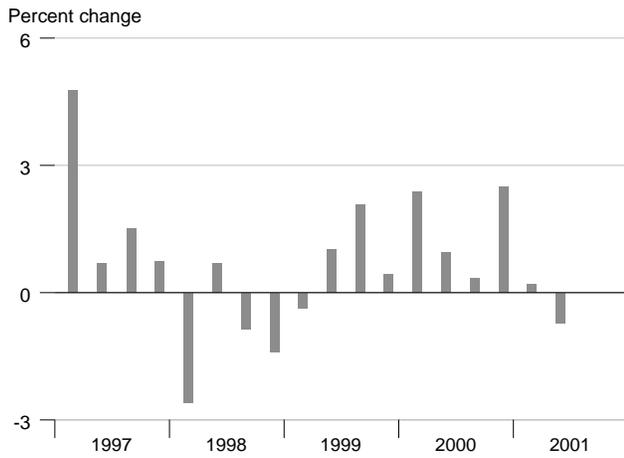


Stock Exchange Index - Milan Stock Exchange

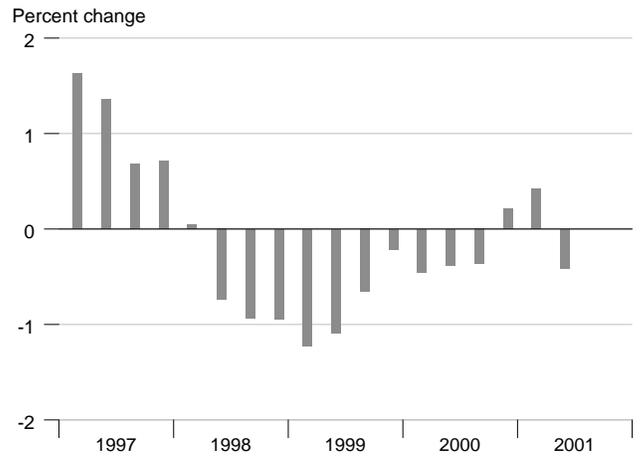
1995 = 100



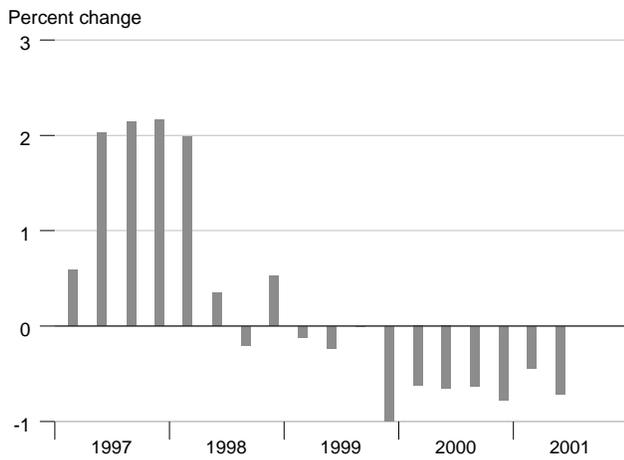
Real GDP Growth



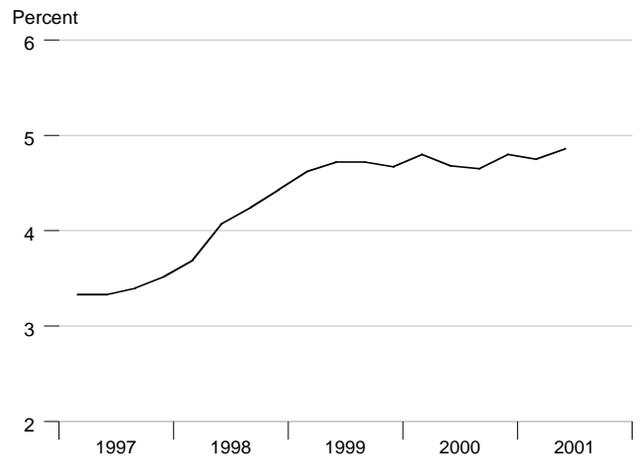
Employment Growth



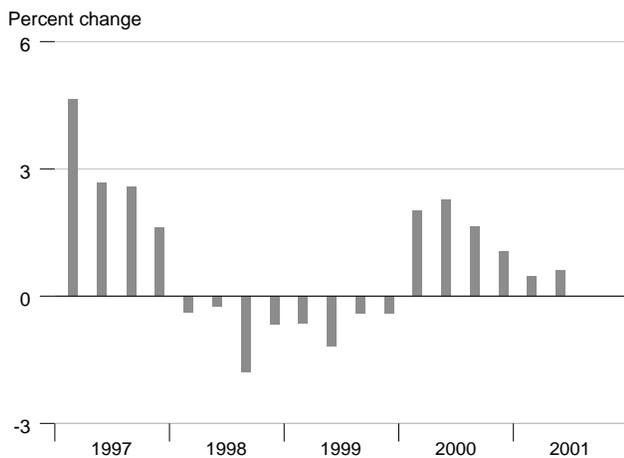
Consumer Price Index



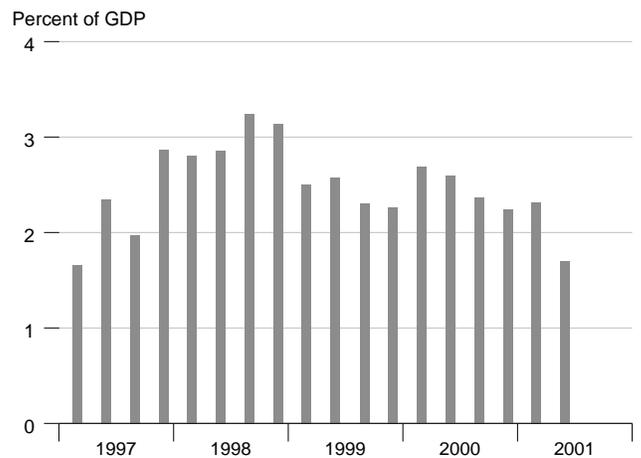
Unemployment Rate



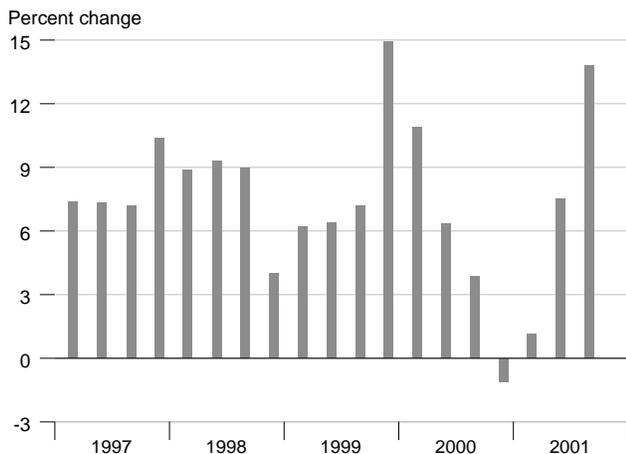
Monthly Earnings



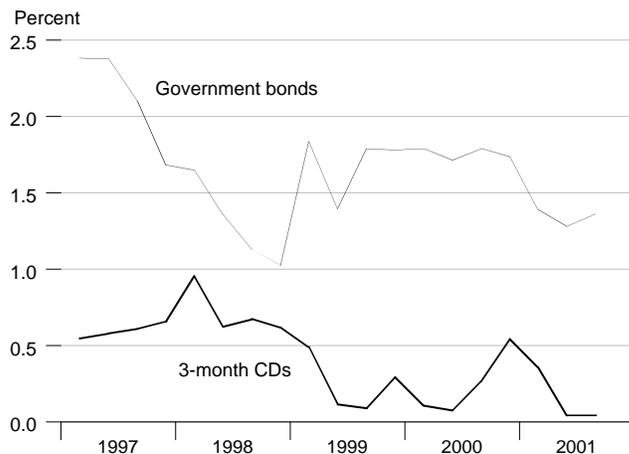
Current Account Balance



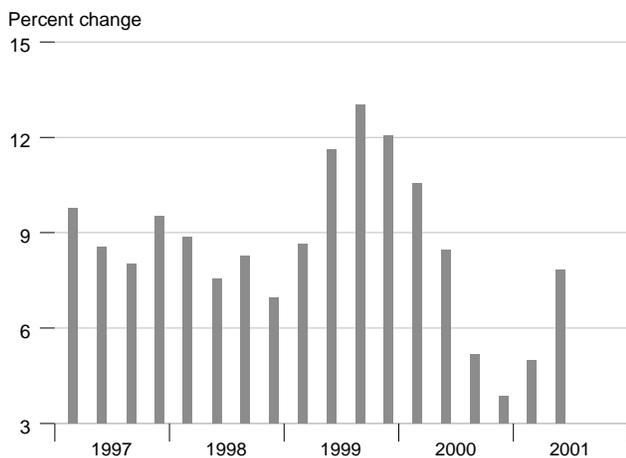
Adjusted Monetary Base Growth



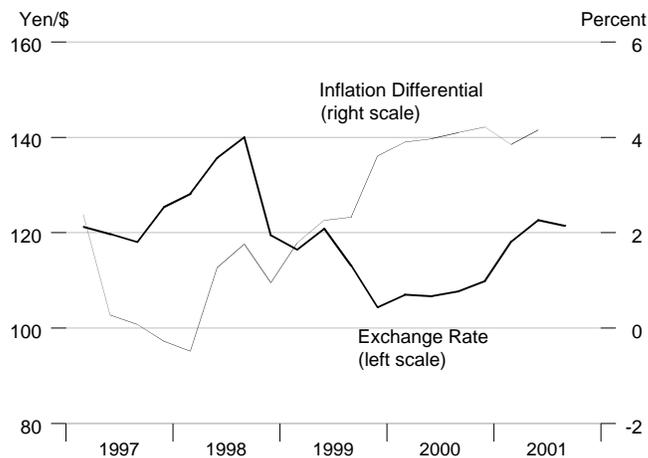
Interest Rates



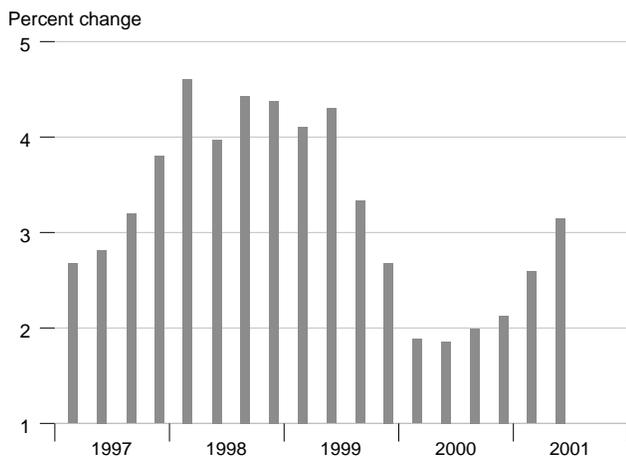
M1 Growth



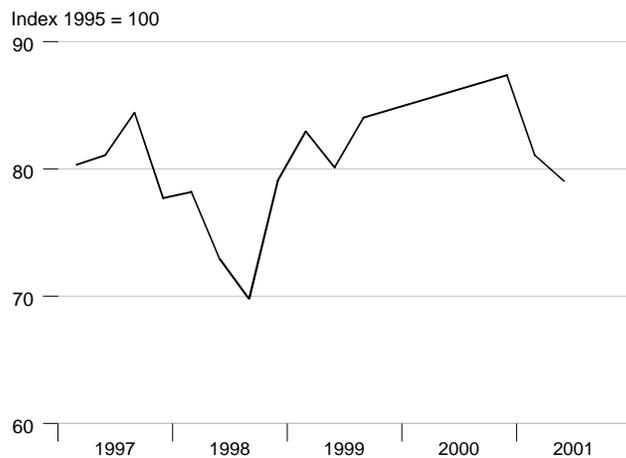
Exchange Rate and Inflation Differential



M2 Growth

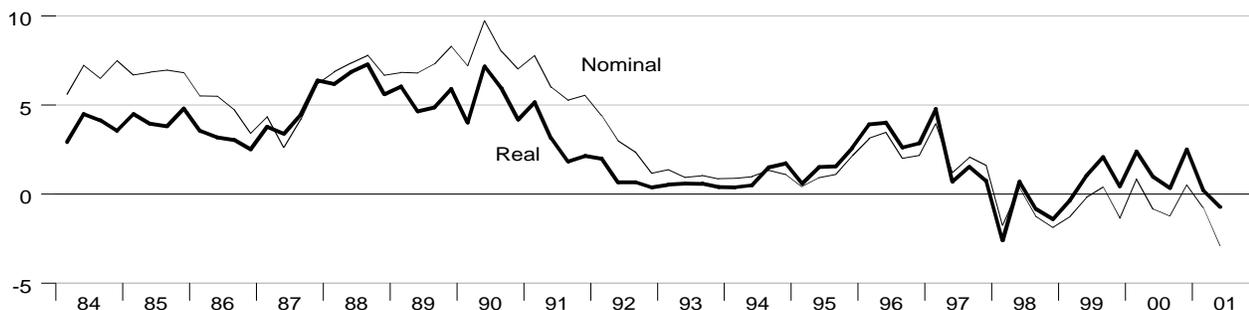


Real Effective Exchange Rate



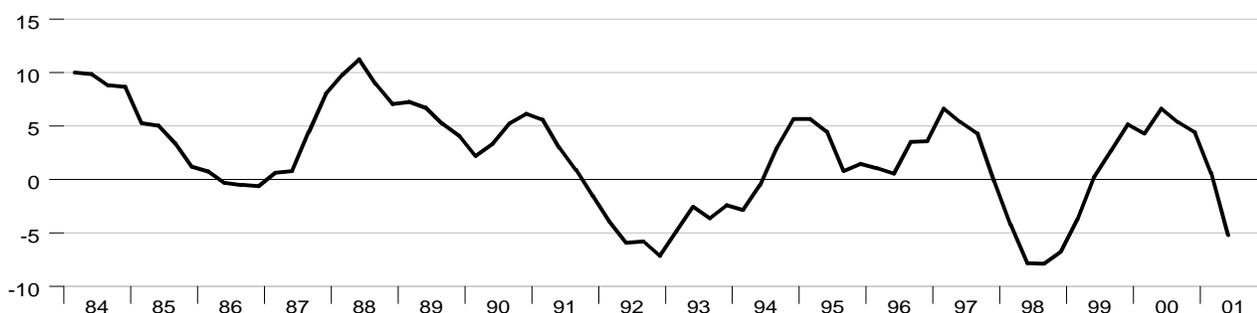
GDP Growth

Percent change



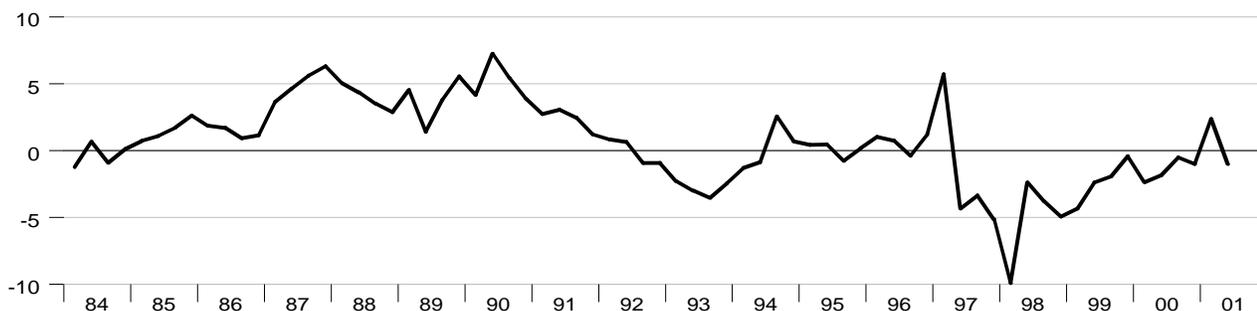
Industrial Production

Percent change



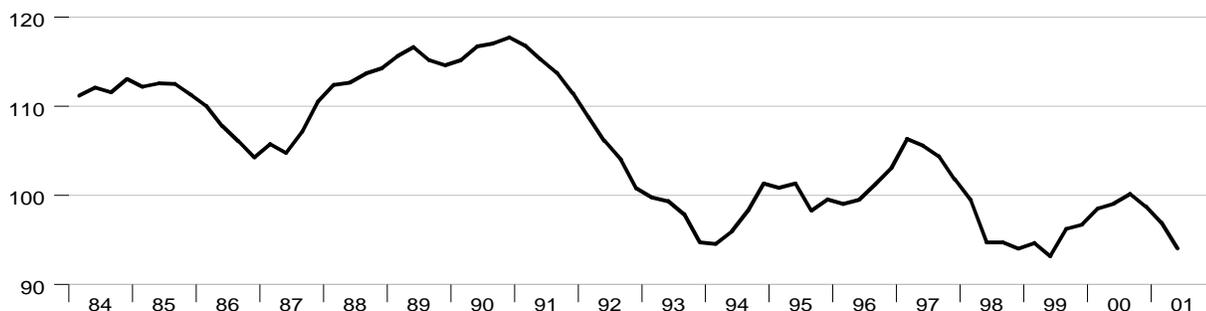
Retail Sales

Percent change



Capacity Utilization

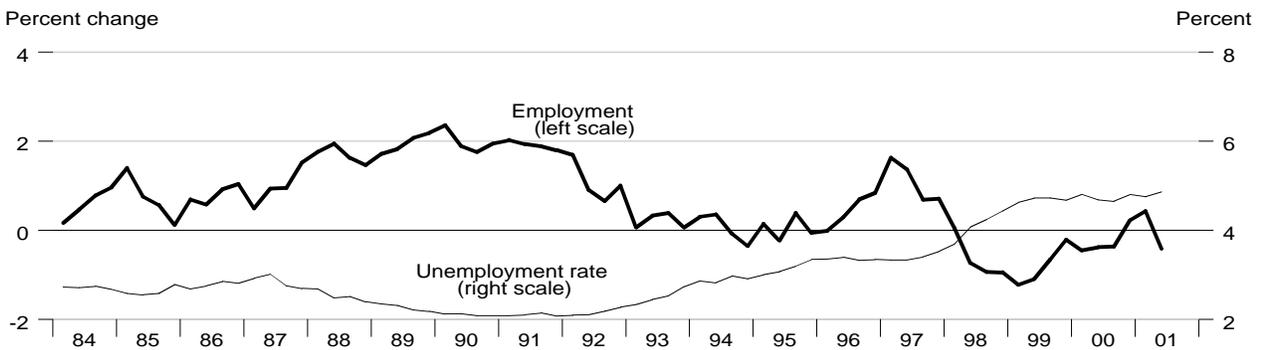
1995 = 100



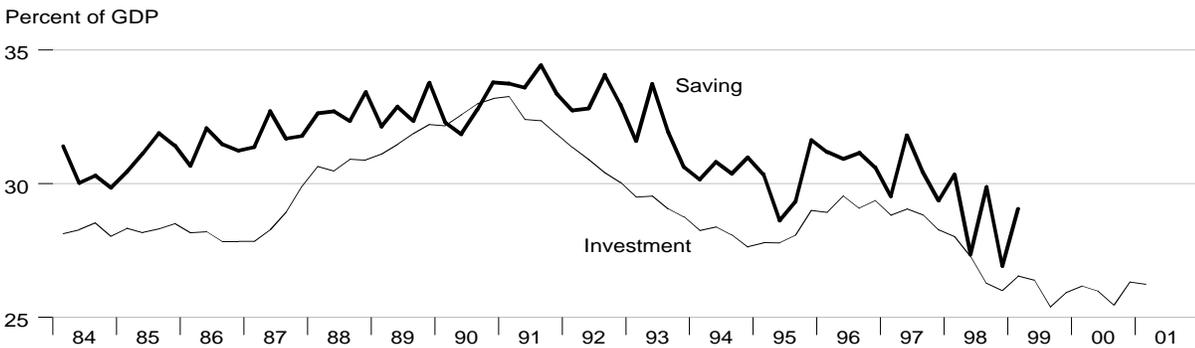
Monthly Earnings and Output per Worker



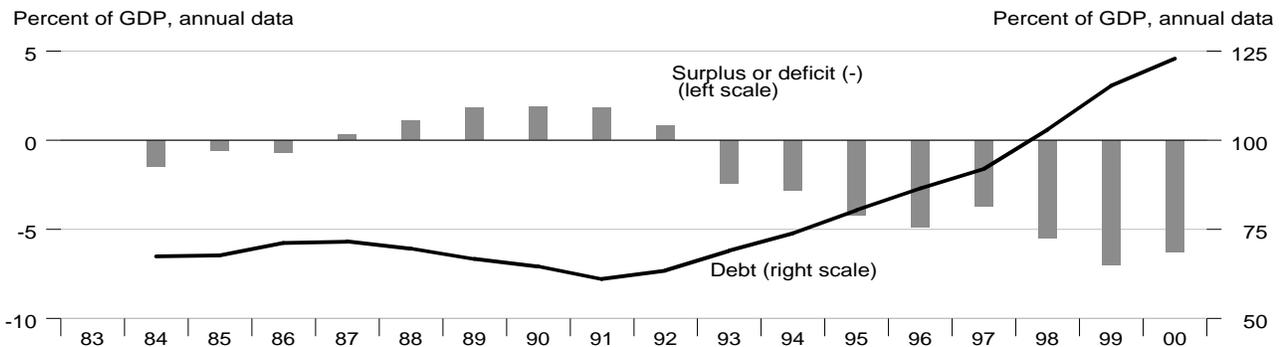
Labor Force Indicators



Saving and Investment

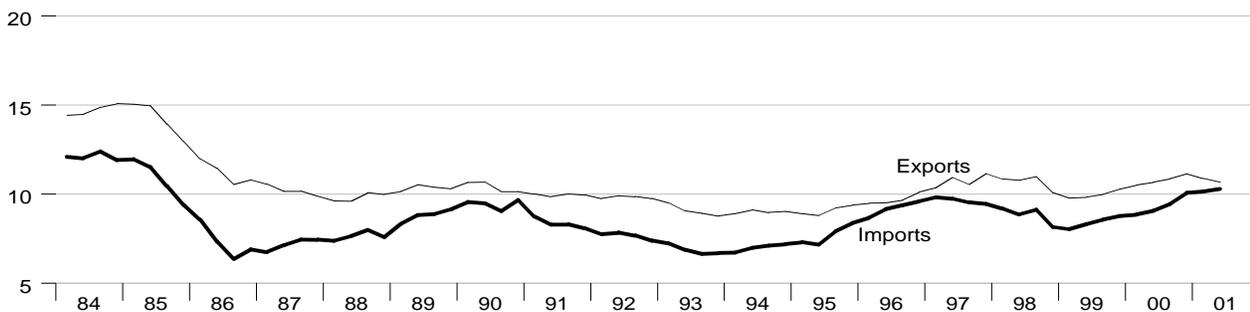


Government Debt and Budget Surplus or Deficit (-)



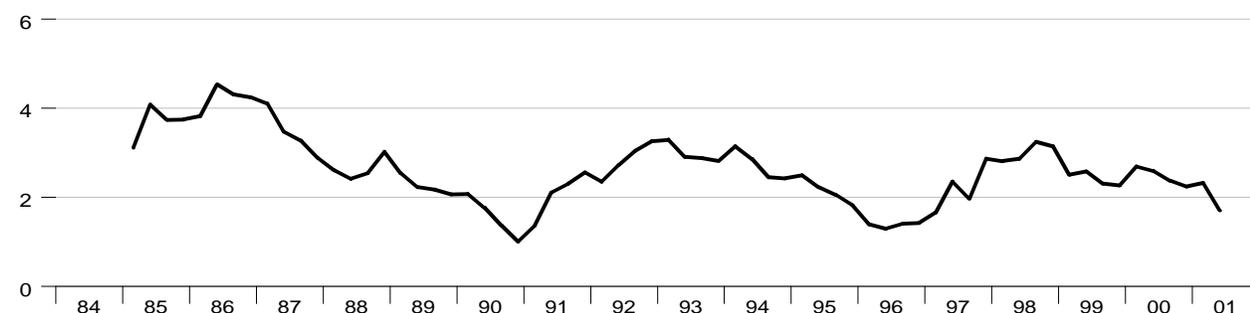
International Trade - Goods and Services

Percent of GDP



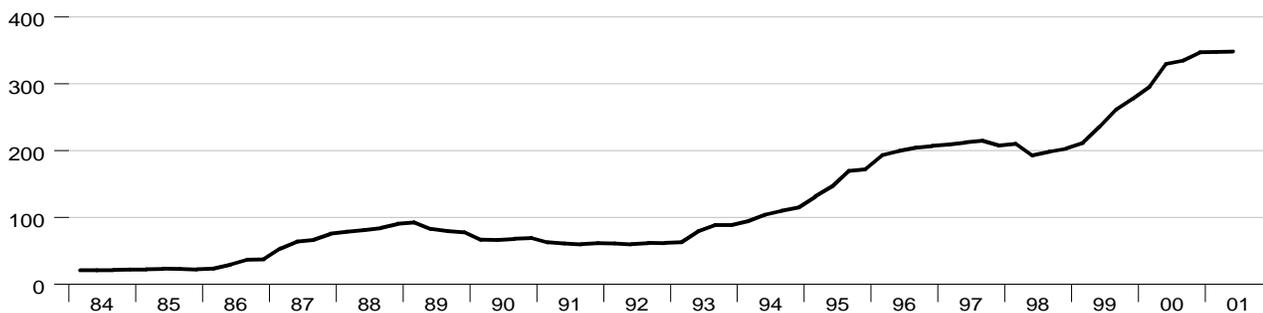
Current Account Balance

Percent of GDP



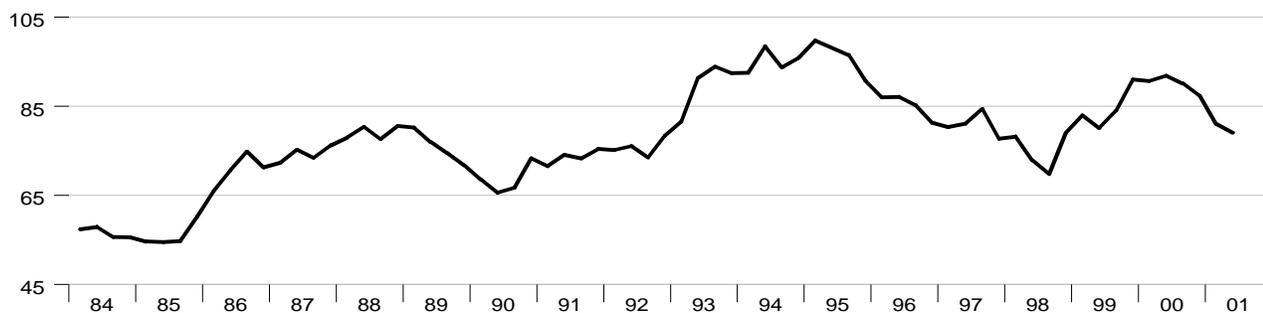
Foreign Exchange Reserves

Billions of US\$



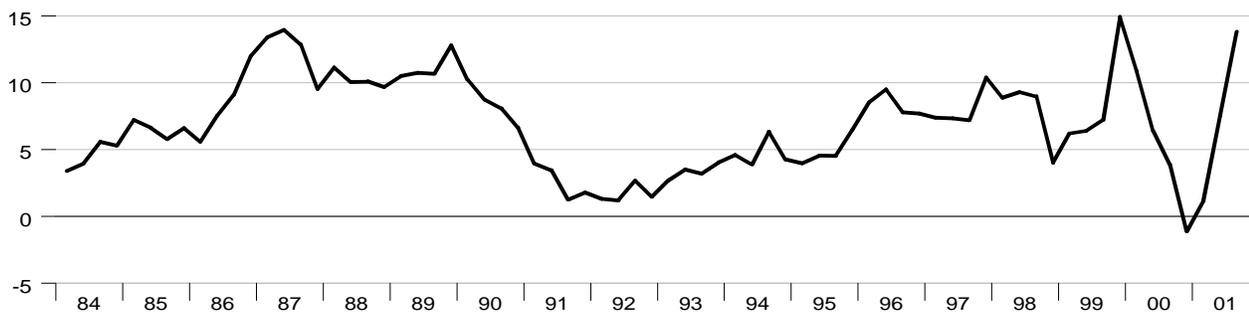
Real Effective Exchange Rate

Index 1995 = 100



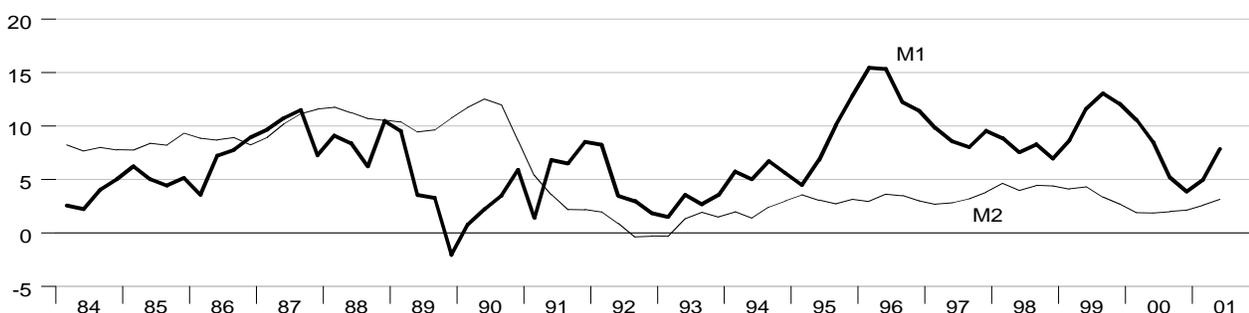
Adjusted Monetary Base Growth

Percent change



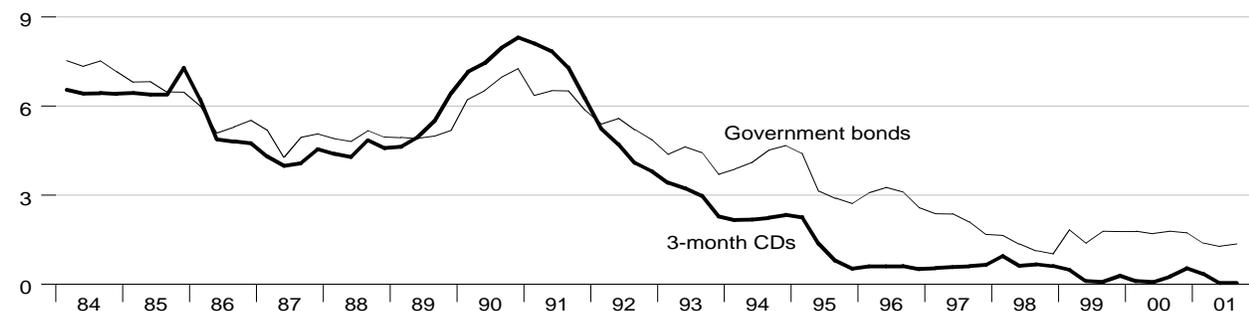
Monetary Aggregates

Percent change



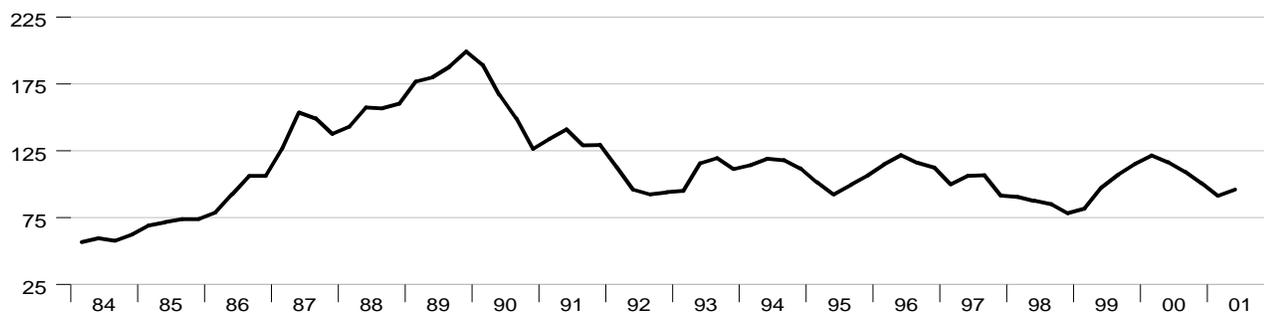
Interest Rates

Percent

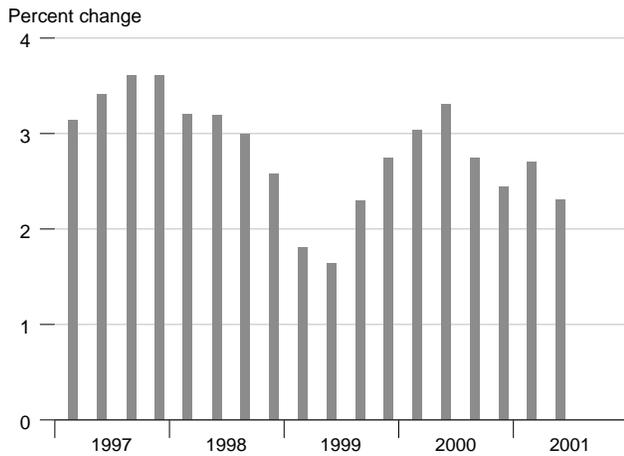


Stock Exchange Index - Tokyo Stock Exchange

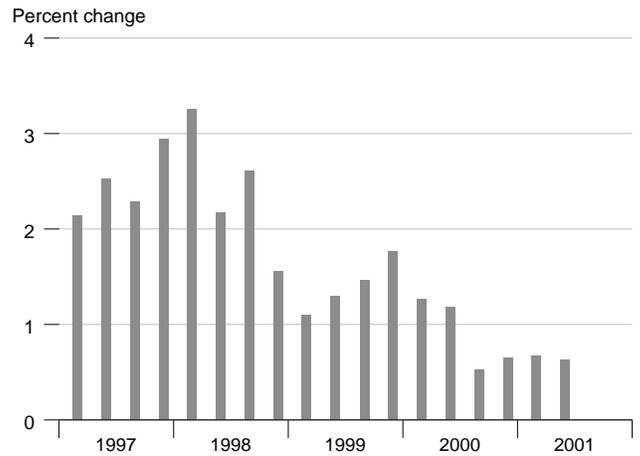
1995 = 100



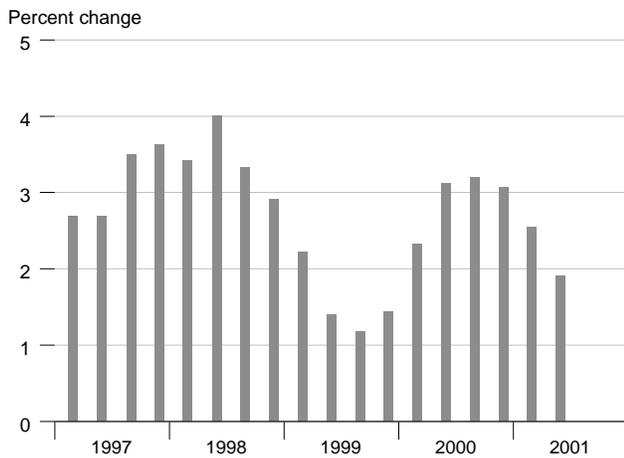
Real GDP Growth



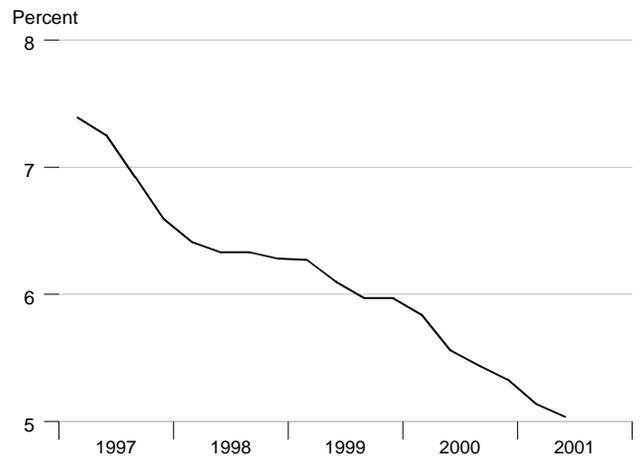
Employment Growth



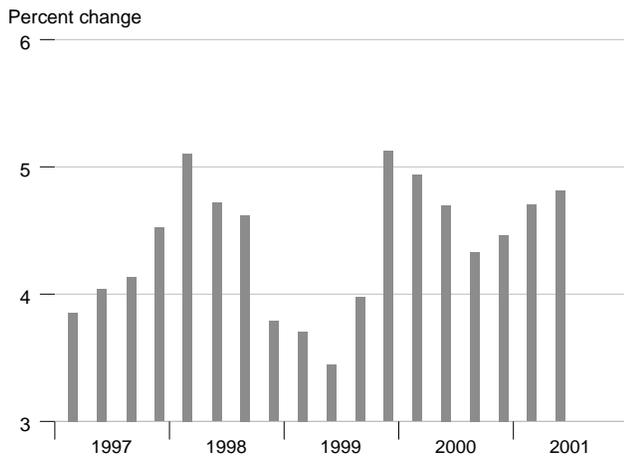
Consumer Price Index



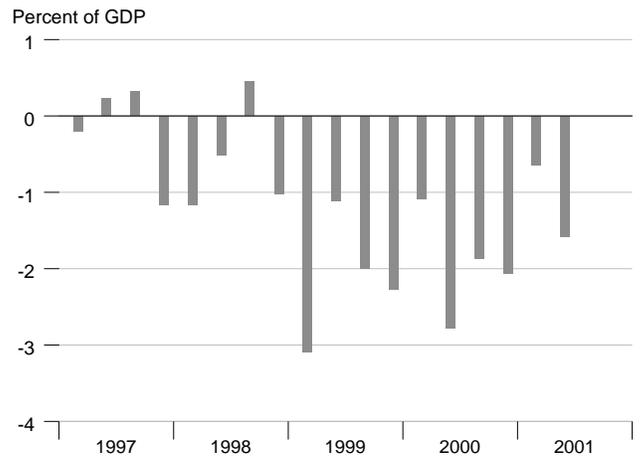
Unemployment Rate



Weekly Earnings

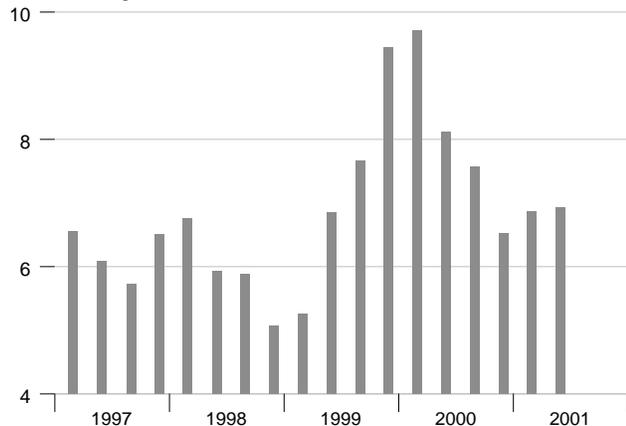


Current Account Balance



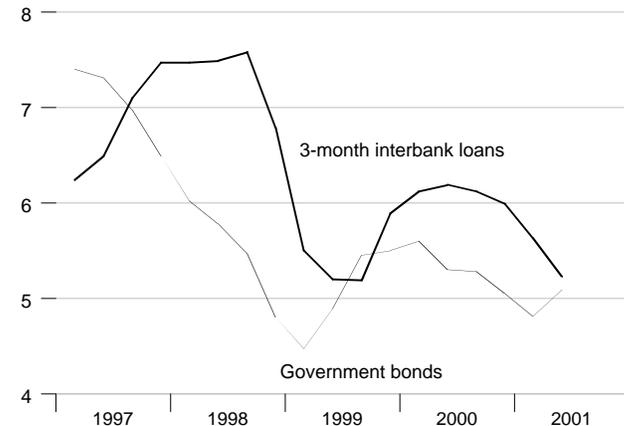
M0 Growth

Percent change



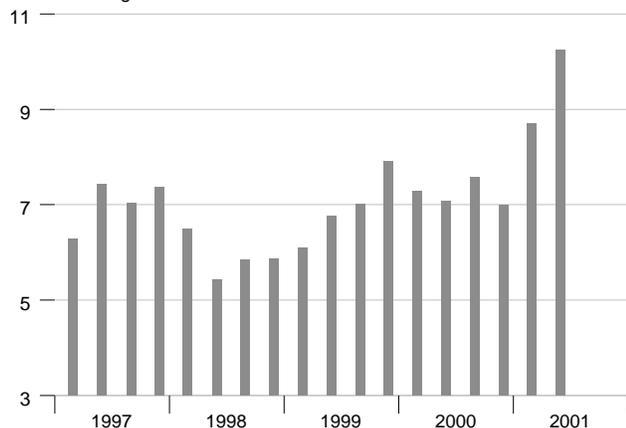
Interest Rates

Percent



M2 Growth

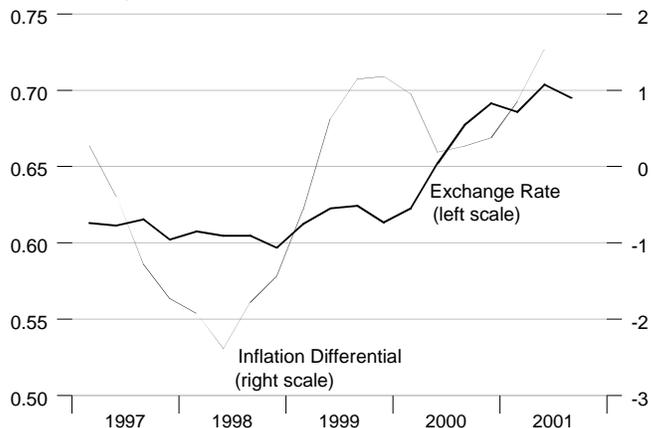
Percent change



Exchange Rate and Inflation Differential

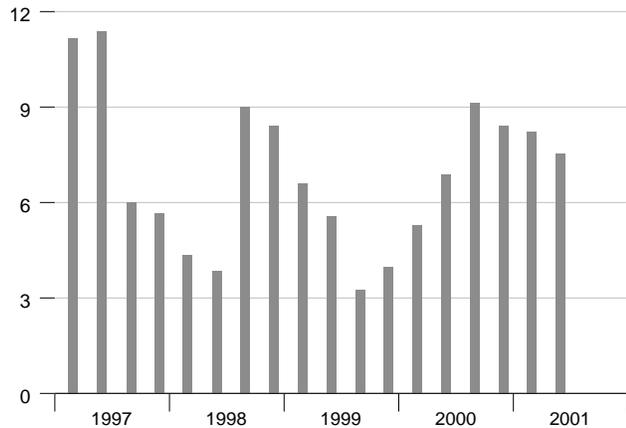
Pounds/US\$

Percent



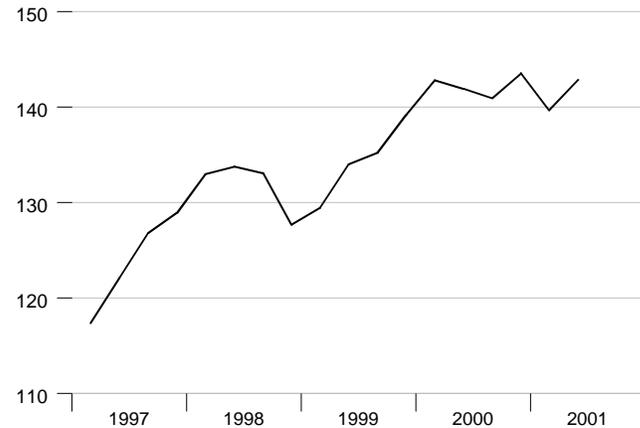
M4 Growth

Percent change



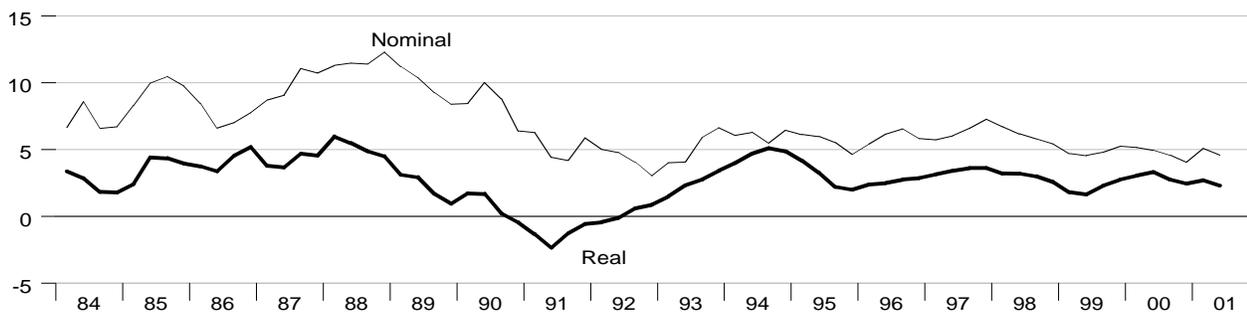
Real Effective Exchange Rate

Index 1995 = 100



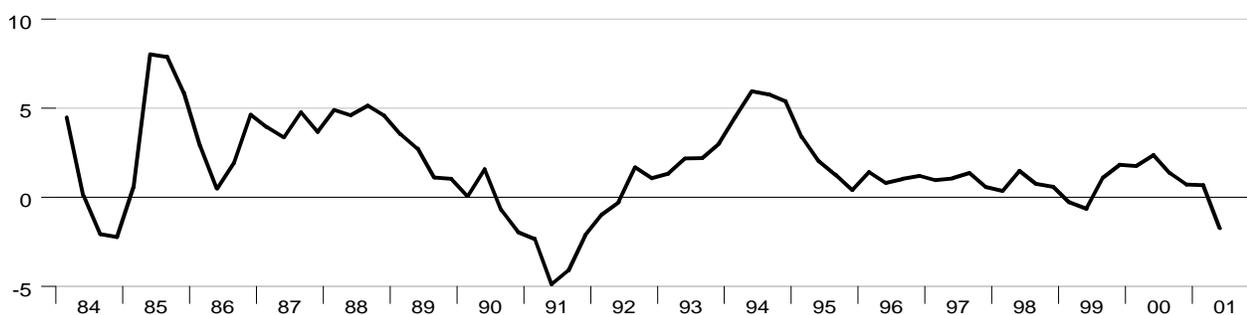
GDP Growth

Percent change



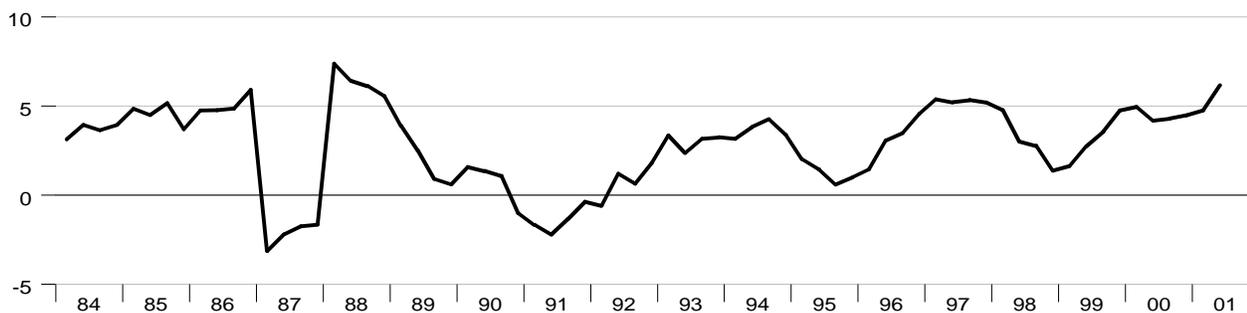
Industrial Production

Percent change



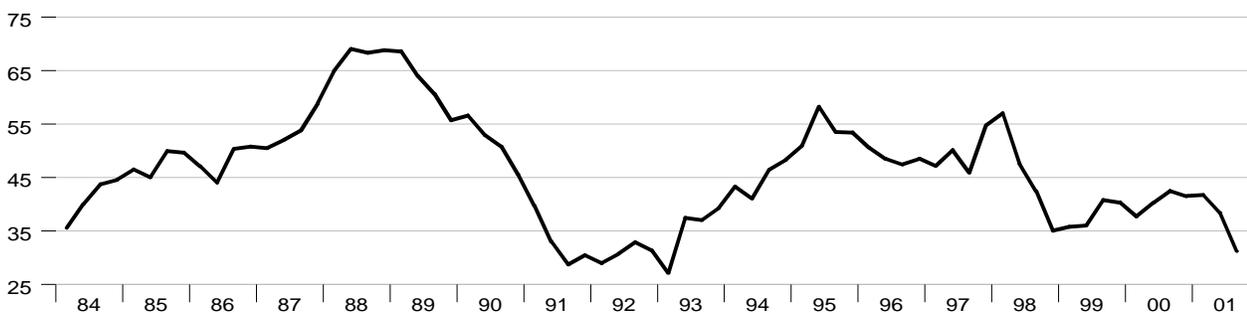
Retail Sales

Percent change

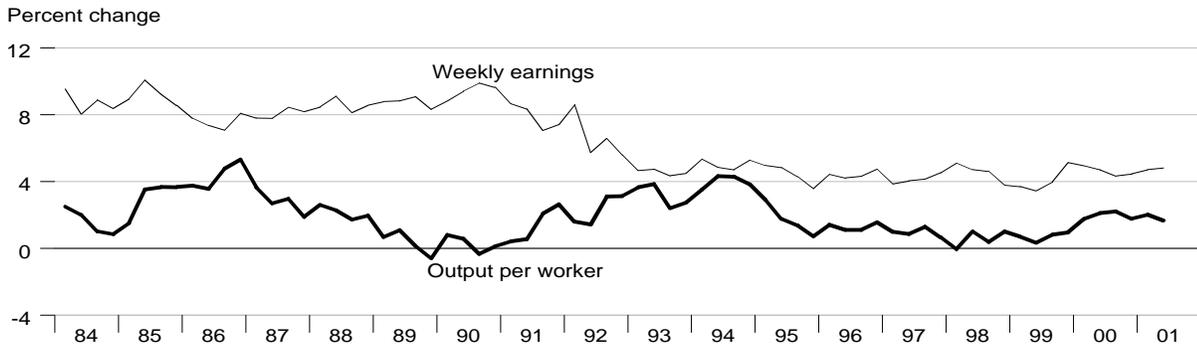


Firms Operating at Capacity

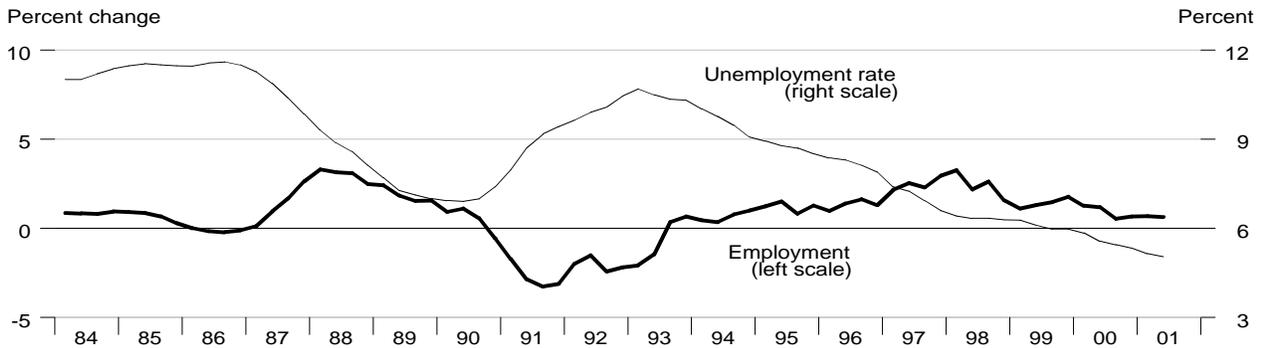
Percent



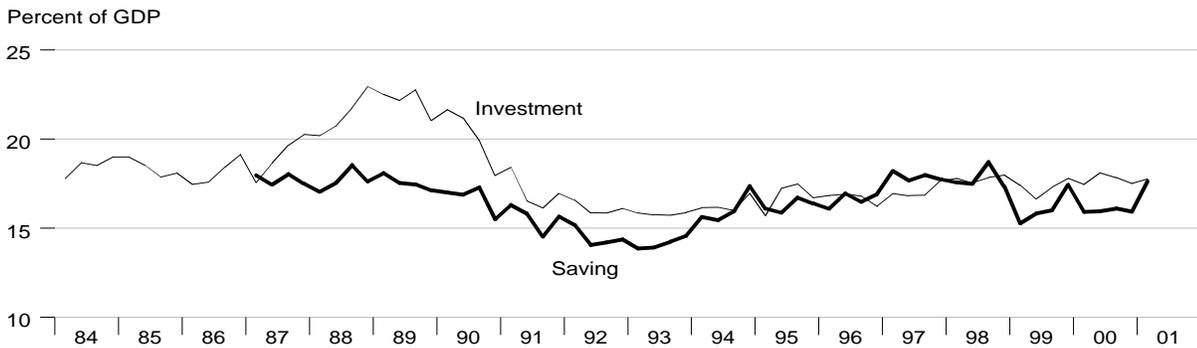
Weekly Earnings and Output per Worker



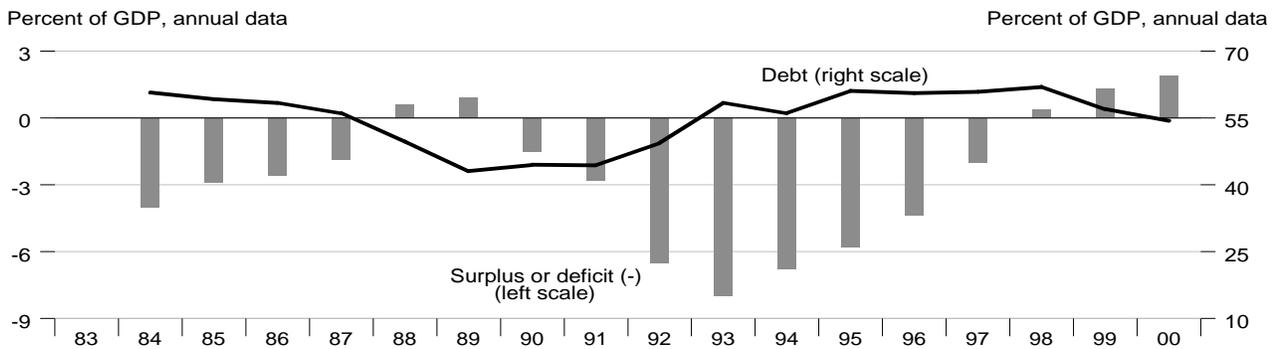
Labor Force Indicators



Saving and Investment

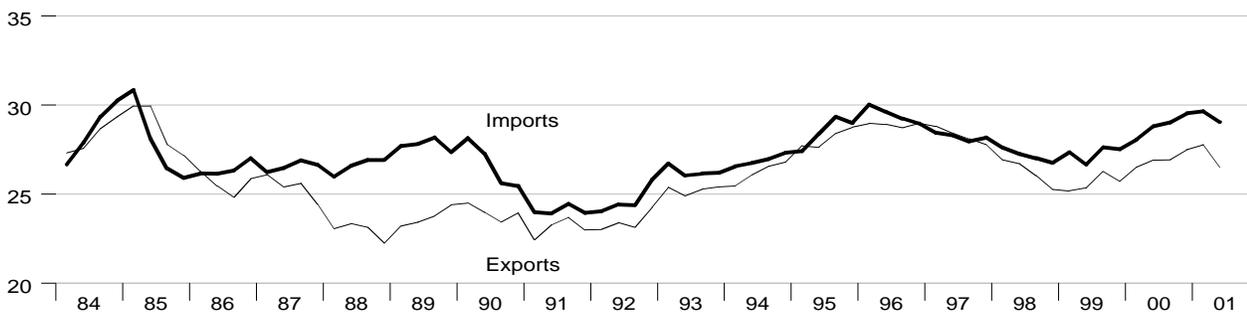


Government Debt and Budget Surplus or Deficit (-)



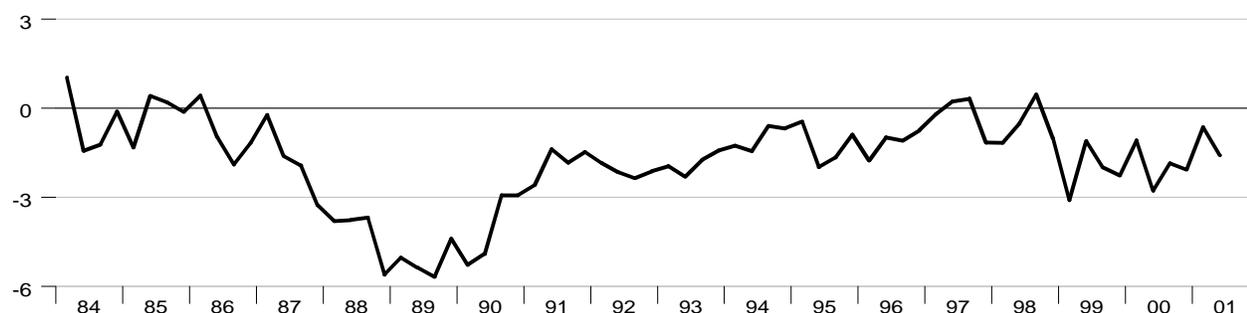
International Trade - Goods and Services

Percent of GDP



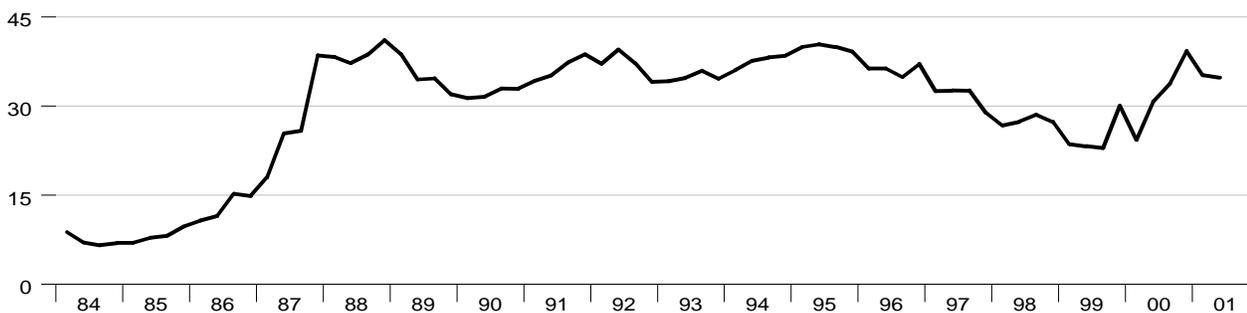
Current Account Balance

Percent of GDP



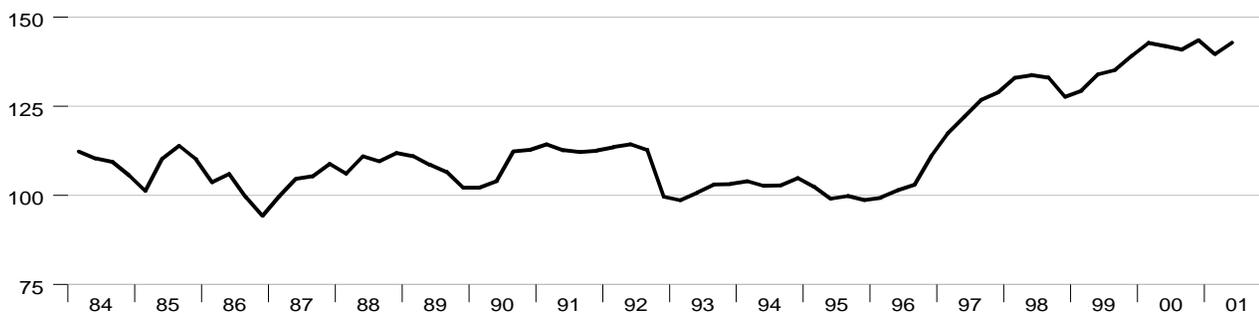
Foreign Exchange Reserves

Billions of US\$



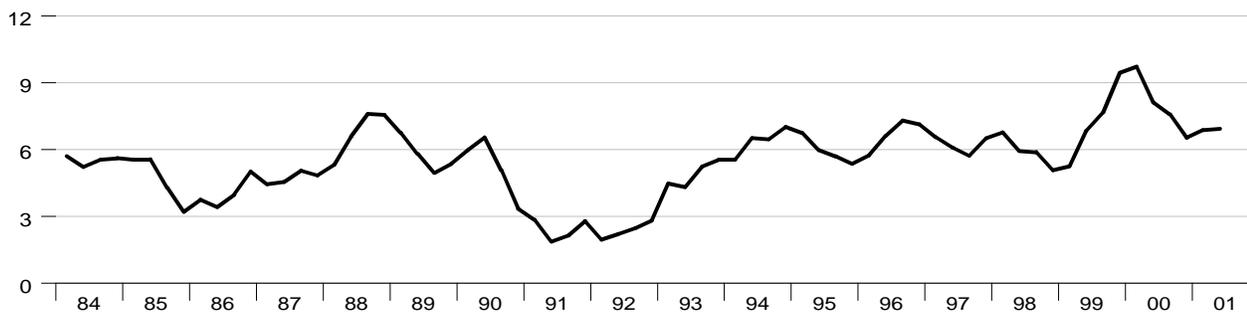
Real Effective Exchange Rate

Index 1995 = 100



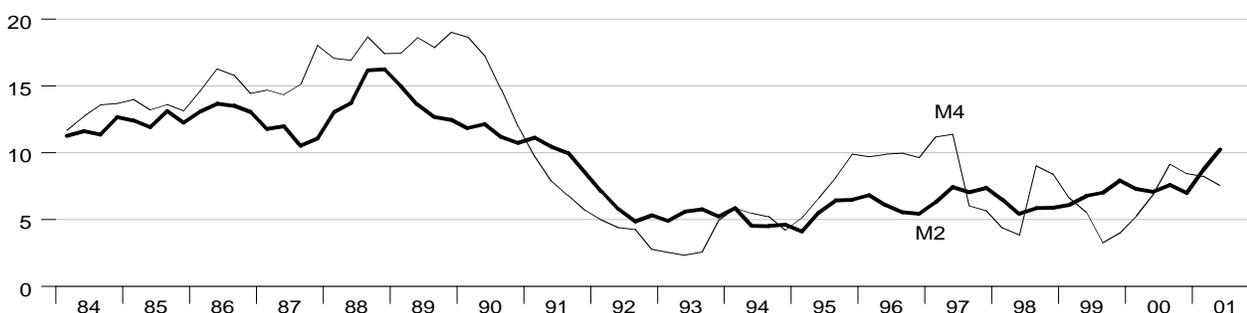
M0 Growth

Percent change



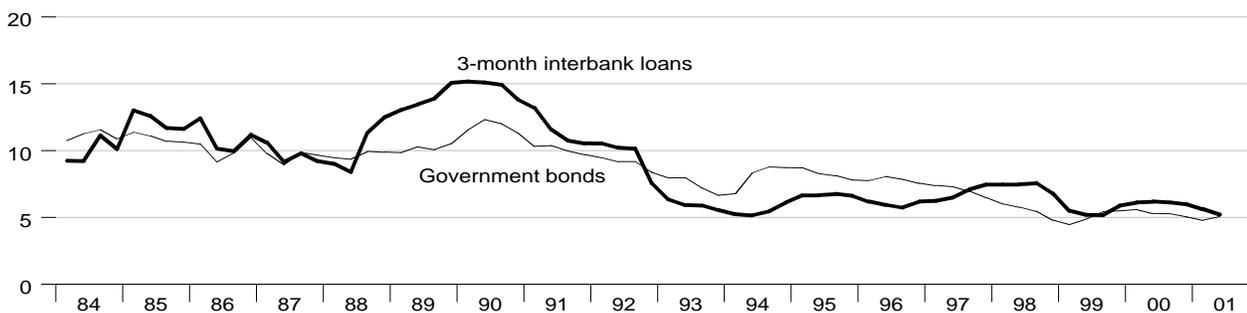
Monetary Aggregates

Percent change



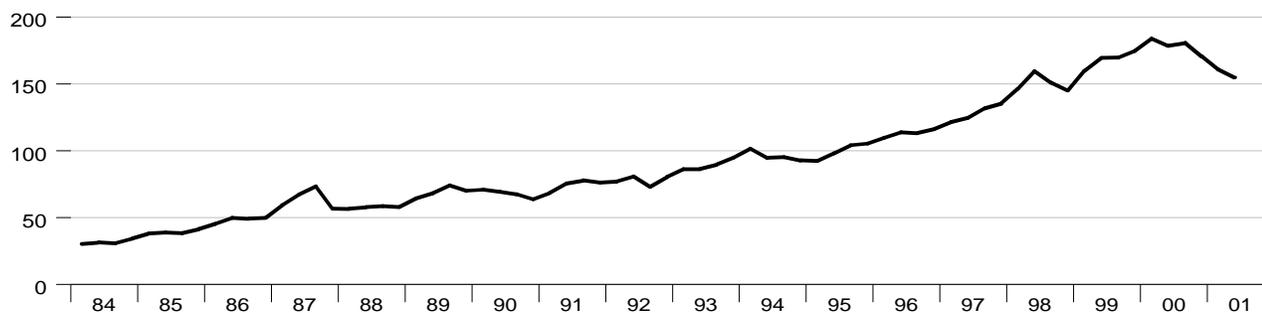
Interest Rates

Percent

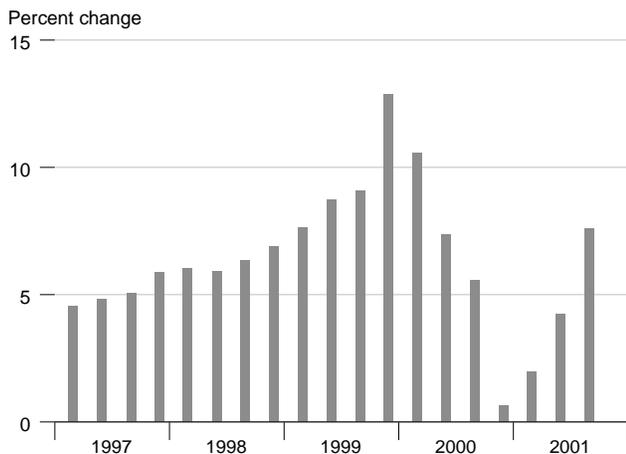


Stock Exchange Index - Financial Times Stock Exchange

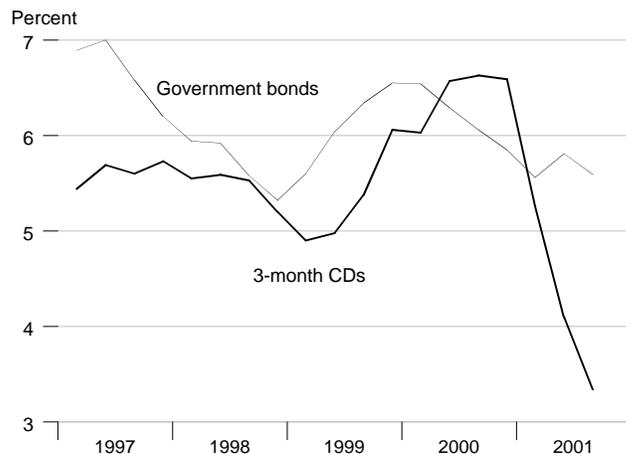
1995 = 100



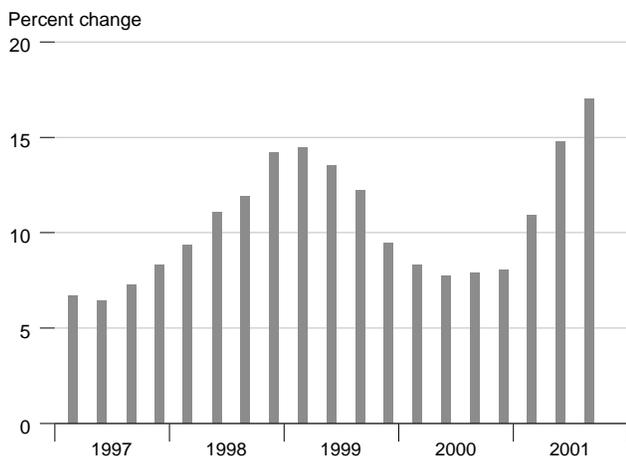
Adjusted Monetary Base Growth



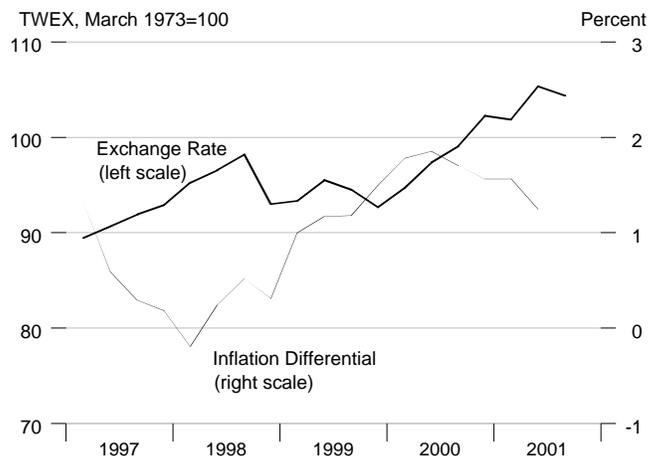
Interest Rates



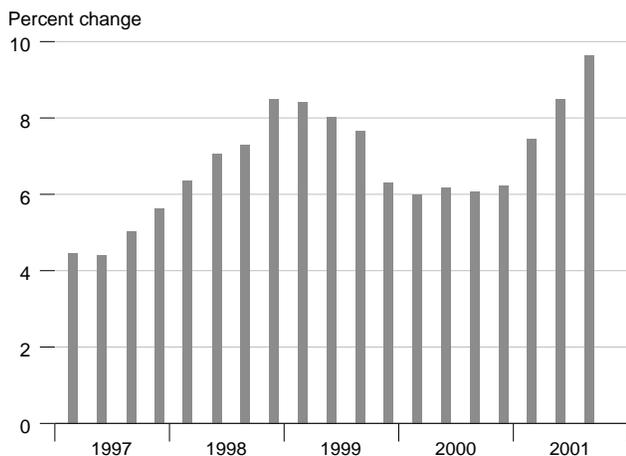
MZM Growth



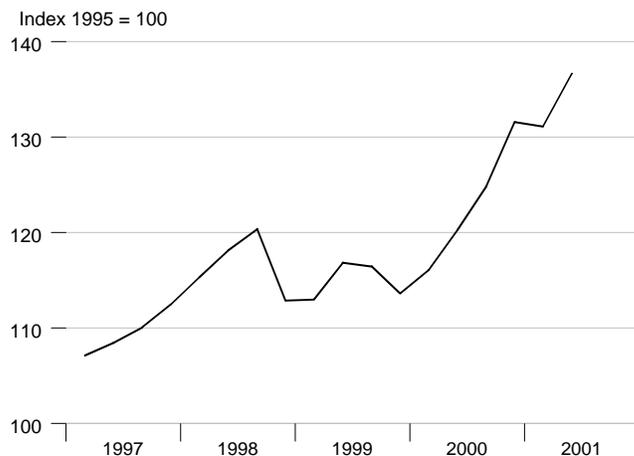
Exchange Rate and Inflation Differential



M2 Growth

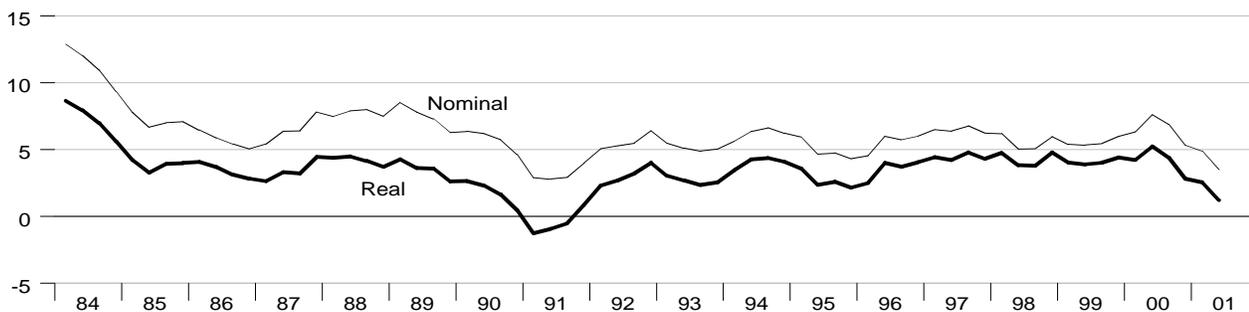


Real Effective Exchange Rate



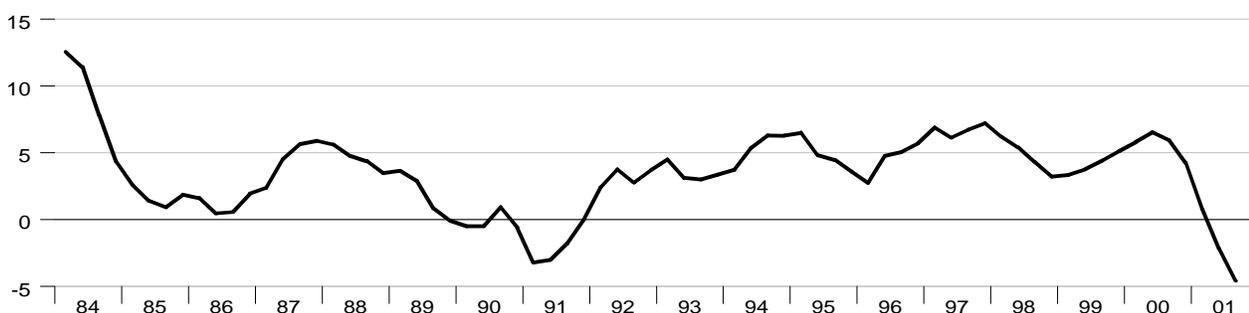
GDP Growth

Percent change



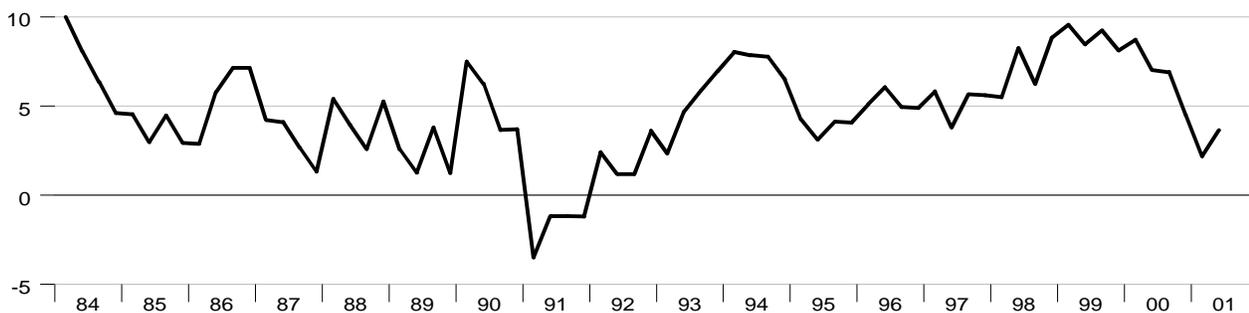
Industrial Production

Percent change



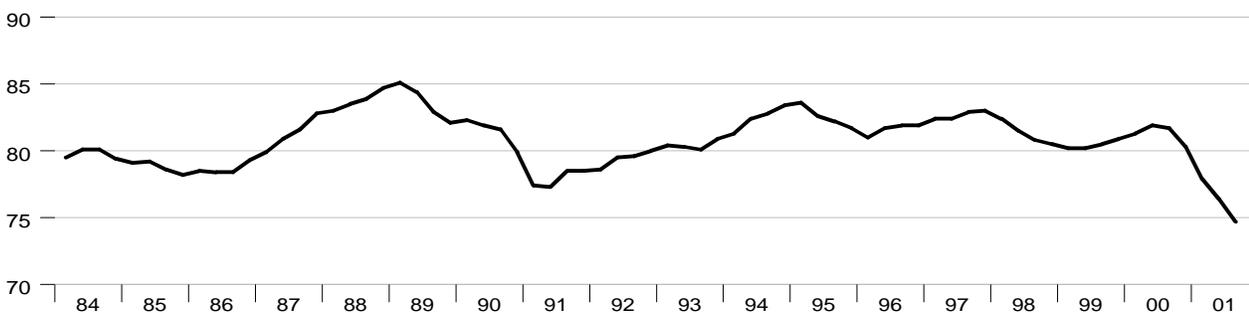
Retail Sales

Percent change

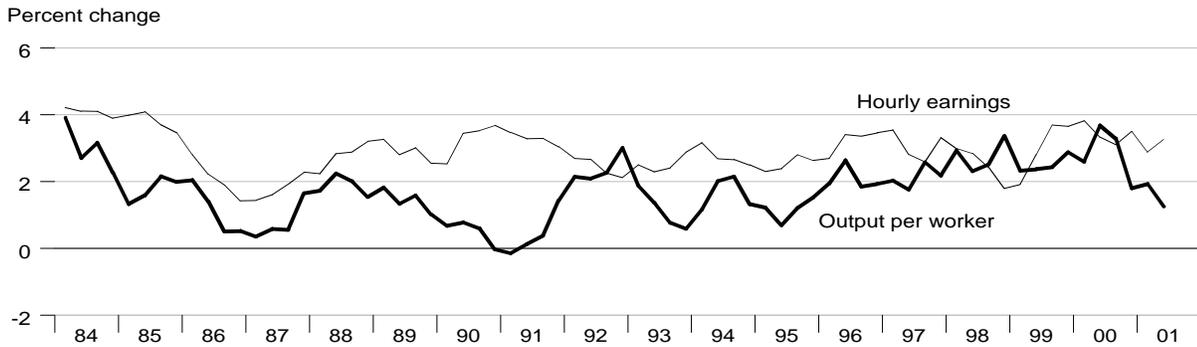


Capacity Utilization

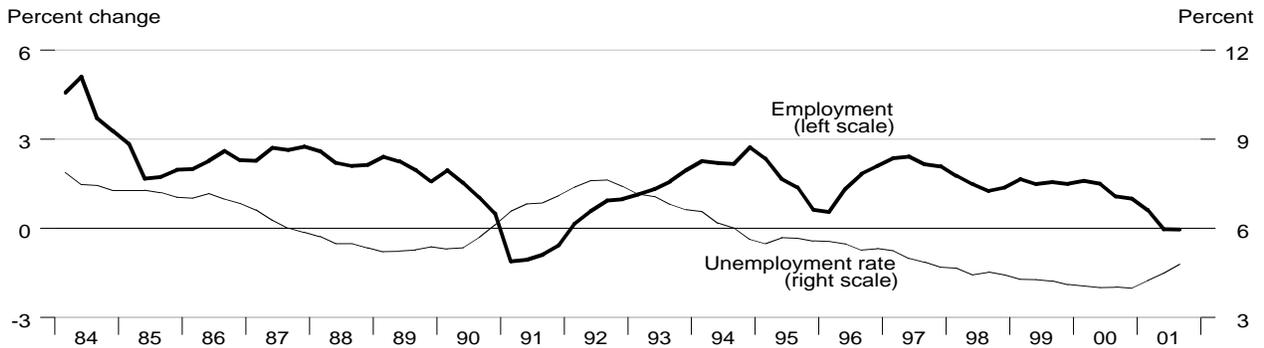
Percent



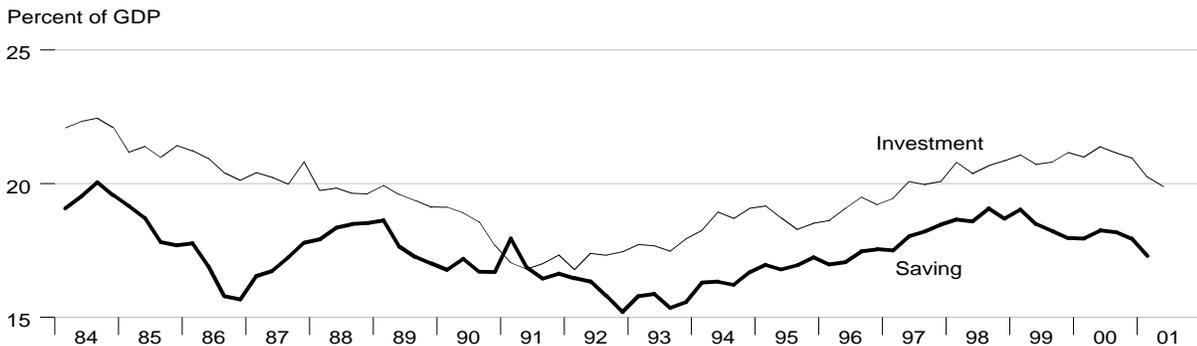
Hourly Earnings and Output per Worker



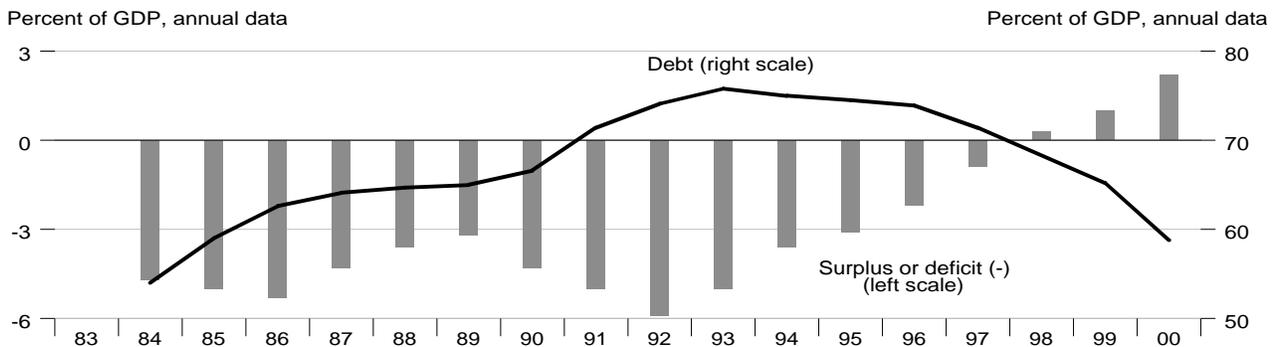
Labor Force Indicators



Saving and Investment

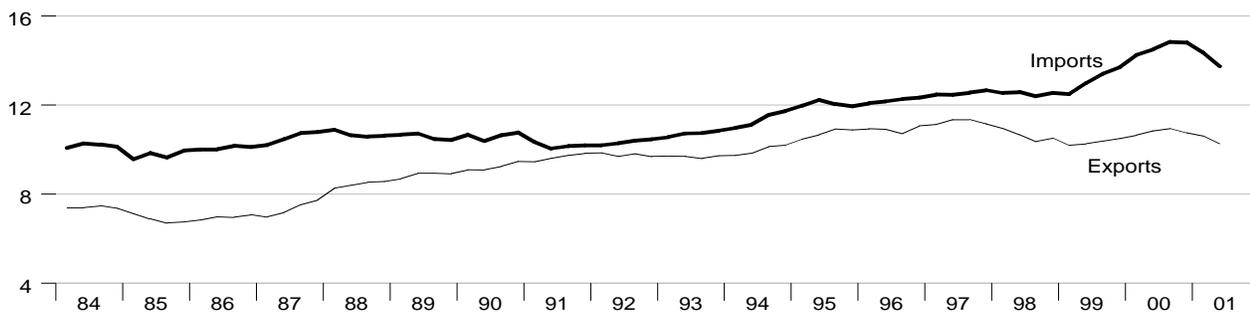


Government Debt and Budget Surplus or Deficit (-)



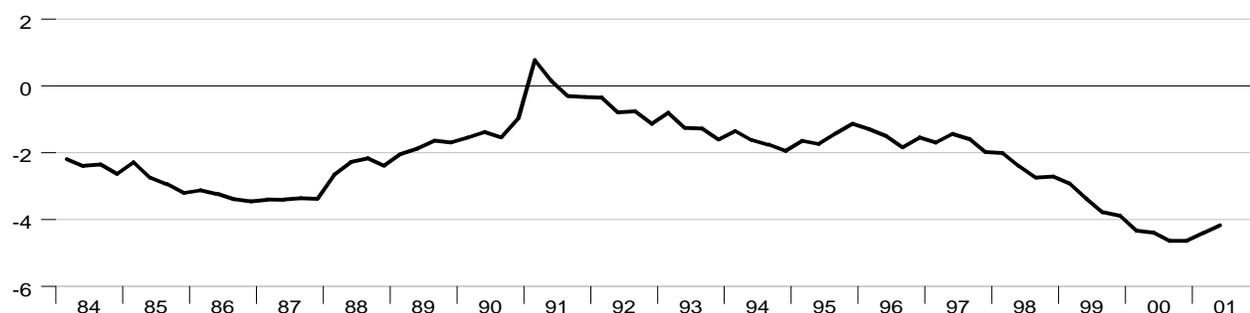
International Trade - Goods and Services

Percent of GDP



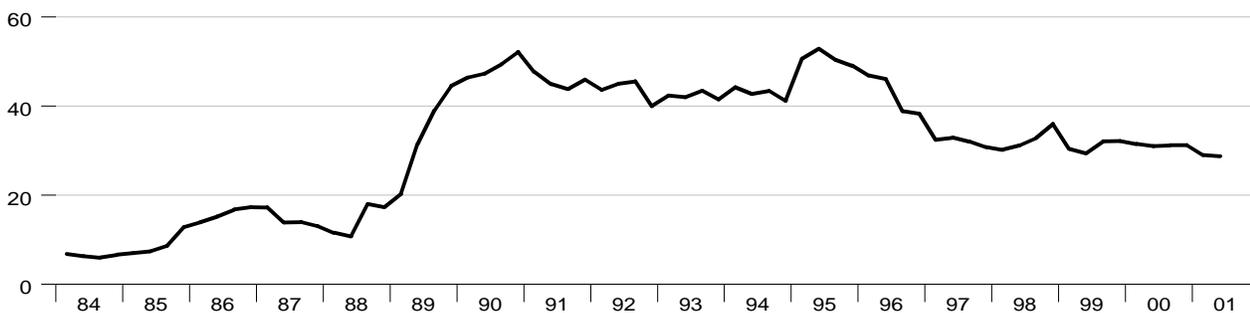
Current Account Balance

Percent of GDP



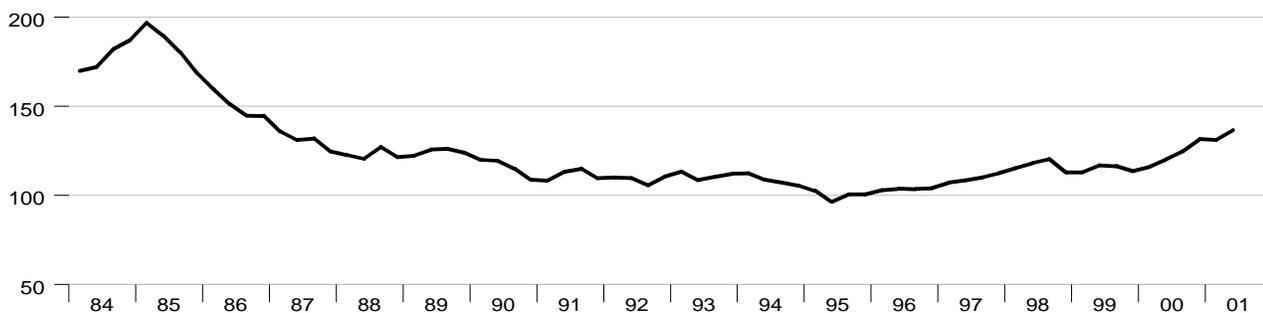
Foreign Exchange Reserves

Billions of US\$



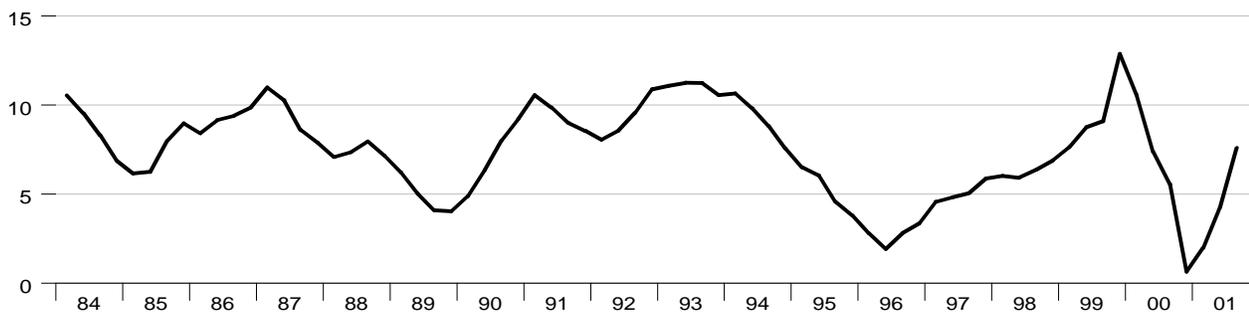
Real Effective Exchange Rate

Index 1995 = 100



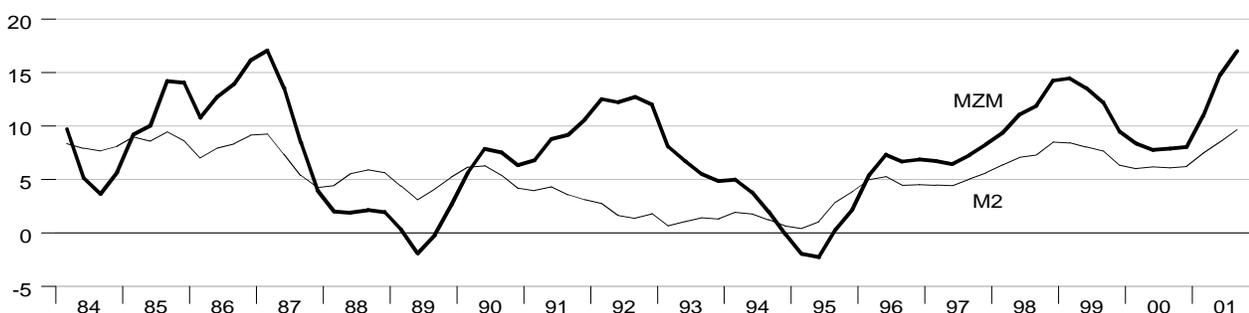
Adjusted Monetary Base Growth

Percent change



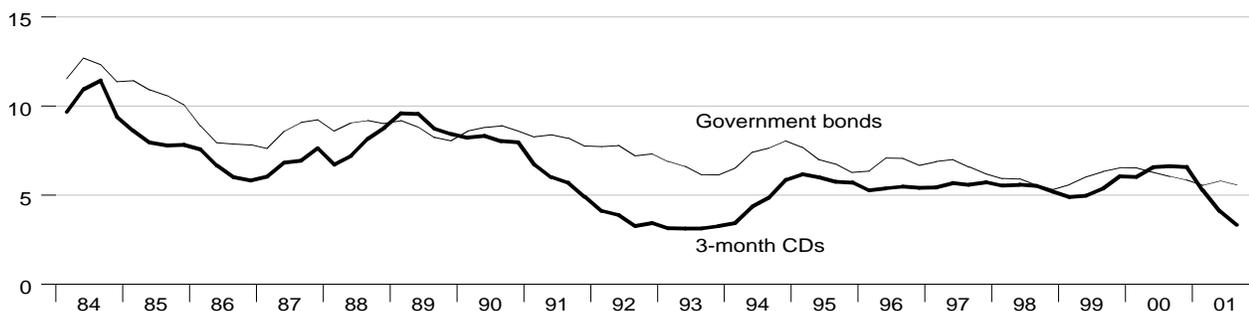
Monetary Aggregates

Percent change



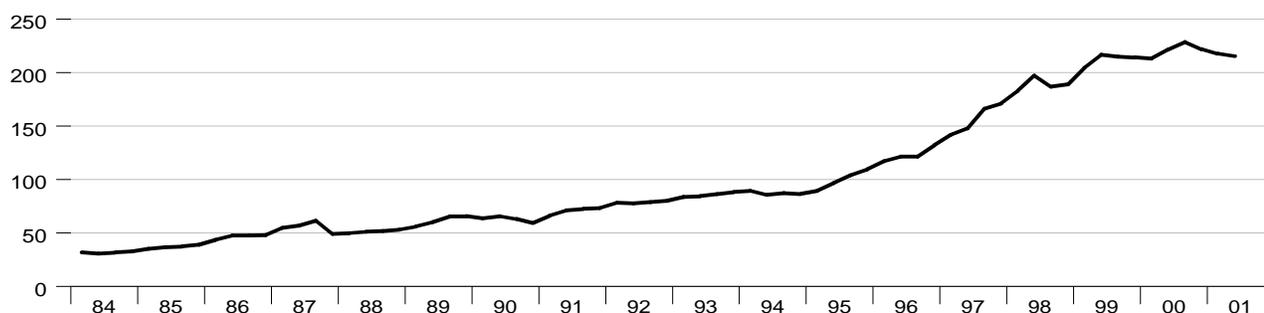
Interest Rates

Percent



Stock Exchange Index - New York Stock Exchange

1995 = 100



Notes

Euro-Area Data – The unit of account for most series is the euro.

On January 1, 2001, the euro area was enlarged to include Greece as its 12th member country. Historical euro area series for capacity utilization, the consumer price index, earnings, employment, GDP, industrial production, retail sales, and unemployment include Greece. The series for current account balance, interest rates, merchandise trade, monetary aggregates, the real effective exchange rate, and the stock exchange index incorporate Greece starting January 2001. The series for government debt and surplus remain for the 11 euro-area countries.

Prior to December 1998, euro-area interest rates are calculated on the basis of national government yields weighted by GDP. Starting in 1999, short-term rates are euro interbank offered rates. Long-term rates are calculated on the basis of national government bond yields weighted by the nominal outstanding amounts of government bonds in each maturity band.

Inflation data for the euro area is based on the harmonized index of consumer prices. Data for individual countries in this publication continues to be based on national consumer price indexes.

The dollar/euro exchange rate used in the chart on page 12 is a synthetic rate prior to January 1999. This is constructed by calculating a weighted average of the exchange rates of the euro-area countries, excluding Greece and Luxembourg, against the dollar. The weights are based on 1997 GDP shares.

German Data – As a result of reunification, data for all of Germany are now incorporated in most of the statistical series. The starting periods for unified German data are listed below. Care should be exercised when interpreting the data around these break periods. Data for capacity utilization remains for western Germany only.

Third quarter 1990: current account balance, international trade, and unemployment.

First quarter 1991: consumer price index, GDP, industrial production, investment, output per worker, and saving.

First quarter 1993: stock exchange index.

Third quarter 1993: employment.

First quarter 1995: hourly earnings.

Capacity Utilization covers the manufacturing sector for Canada, France, Japan, the United Kingdom, the United States, and the euro area; manufacturing excluding food, beverage, and tobacco for Germany; and mining and manufacturing for Italy.

Consumer Price Index is for all items. The current index is based on goods and services consumed by all individuals for Canada and Italy; all households for France; households with a monthly income of less than 25,000 DM for Germany; all multi-person households excluding those mainly engaged in agriculture, forestry, and fisheries for Japan; all households except pensioners dependent on state pension and high income households for the United Kingdom; and all urban households for the United States.

Current Account Balance is the sum of merchandise and service exports and income receipts on domestic assets abroad minus the sum of merchandise and service imports and income payments from foreign assets in the domestic economy plus net unilateral transfers.

Earnings are based on hourly earnings in manufacturing for Canada, France, Germany, the United States, and the euro area; hourly earnings in industry excluding construction for Italy; monthly earnings in manufacturing for Japan; and weekly earnings in manufacturing for the United Kingdom.

The **Real Effective Exchange Rate** uses normalized unit labor costs in manufacturing. The weighting scheme used to construct the rates, for all except the euro area, is based on disaggregated data for trade among 21 industrial countries in manufactured goods for 1989-91. For the euro area the weights relate to the trade of the euro area with the other countries. The weights reflect the relative importance of a country's trading partners in its direct bilateral trade relations and competition in third markets. Normalized unit labor costs in manufacturing are calculated by dividing an

index of actual hourly compensation per worker by a five-year moving average index of output per man-hour.

Employment data refer to civilian employment for Canada, Germany, Italy, Japan, the United States, and the euro area; industrial employment for France; and total employment for the United Kingdom.

Fluctuations in the dollar value of **Foreign Exchange Reserves** occur as a result of changes in reserve holdings and/or changes in the dollar value of the currencies held.

Government Surplus is the difference between general government current receipts and total outlays. Total outlays consist of current expenditures and net capital expenditures. **Government Debt** incorporates all financial liabilities of the general government sector. The general government sector consolidates the accounts of the central, state, local, and social security sectors.

The **Inflation Differential** is the difference between the U.S. inflation rate and the foreign inflation rate, as measured by the consumer price index. For the U.S. chart on page 41, the inflation differential is the difference between the U.S. inflation rate and a weighted average of the inflation rates in the 17 countries used in the major currency trade-weighted exchange index. For the euro-area chart on page 12, the inflation differential is the difference between the U.S. inflation rate and the euro-area inflation rate as measured by the harmonized consumer price index.

Industrial Production measures the change in the volume of output in the mining, manufacturing, oil, electricity, gas, and water industries.

The **Short-Term Interest Rate** table on page 4 uses the relevant 3-month interest rate shown in the country pages.

The **Long-Term Interest Rate** table on page 4 uses the government bond rate. The government bond rate is a composite of yields on federal government bonds with maturities of more than 10 years for Canada and the United States; long-term public and semi-public sector bonds for France; 7- to 15-year public sector bonds for Germany; 15- to 20-year government bonds through 1990, and 10-year government bonds starting in 1991 for Italy; and 10-year government bonds for Japan, the United Kingdom, and the euro area.

Investment is gross fixed capital formation and changes in stocks (inventories) of the government and business sectors.

The **Reserve Money** table on page 4 refers to the adjusted monetary base for Japan and the United States; reserve money for Canada; and M0 for the United Kingdom. **Reserve Money** is currency in circulation, deposits of the deposit money banks, and demand deposits of other residents (with the exception of the central government) with the monetary authority.

Adjusted Monetary Base

Japan – currency in circulation and current deposits at the Bank of Japan.
United States – the sum of currency in circulation outside Federal Reserve banks and the U.S. Treasury, deposits of depository financial institutions at Federal Reserve banks, and an adjustment for the effects of changes in statutory reserve requirements on the quantity of base money held by depositories.

M0

United Kingdom – notes and coins in circulation outside the Bank of England and bankers' operational deposits at the Bank of England.

M1

Canada – currency in circulation and chartered bank net demand deposits.
Japan – cash, currency in circulation, and deposit money.
Euro area – currency in circulation and overnight deposits.

MZM

United States – currency in circulation, travelers' checks, total publicly-held checkable deposits minus cash items in the process of collection and Federal Reserve float, savings deposits, shares in retail money market mutual funds (funds with initial investments of less than \$50,000), net of retirement accounts, and institutional money market mutual funds.

M2

Canada – M1 plus all checkable notice deposits and personal term

deposits.

United Kingdom – currency in circulation and sterling retail deposits with the U.K. banks and building societies.

United States – MZM less institutional money market mutual funds plus small denomination (less than \$100,000) time deposits.

M2 + CDs

Japan – M1 plus private deposits, public deposits less demand deposits, and certificates of deposit.

M3

Euro area – M1 plus deposits with a maturity up to 2 years, deposits redeemable at notice up to 3 months, repurchase agreements, money market funds, and debt securities up to 2 years.

M4

United Kingdom – M2 plus wholesale deposits with the U.K. banks and building societies.

Output Per Worker is the ratio of real GDP to employment.

Retail Sales are based on a volume index.

Saving is gross national saving which includes net national saving (receipts less disbursements of households, business, and the government) and consumption of fixed capital.

The **Stock Exchange Index** refers to all share prices except for the United Kingdom, which excludes financial firms.

The trade-weighted exchange rate, **TWEX**, is the Board of Governors of the Federal Reserve System's major currency trade-weighted dollar exchange rate. This is a weighted average of the exchange value of the U.S. dollar relative to the major international currencies of 17 industrial countries.

The **Unemployment Rate** is the standardized unemployment rate. It is the percentage of the civilian labor force that is unemployed. The unemployed are all persons of working age who are without work, readily available for work, and actively seeking work. The standardized rate may differ from the national unemployment rate calculations.

Sources

Abbreviations

Board of Governors of the Federal Reserve System (BOG)
Bureau of Economic Analysis, U.S. Department of Commerce (BEA)
Bureau of Labor Statistics, U.S. Department of Labor (BLS)
Financial and Economic Research International (FERI)
International Monetary Fund, *International Financial Statistics* (IMF)
Organization for Economic Cooperation and Development,
Economic Outlook (OECD1)
Main Economic Indicators (OECD2)
Quarterly National Accounts (OECD3)
Annual National Accounts (OECD4)

Canada

Bank of Canada: M1 and M2.
BOG: exchange rate.
IMF: foreign exchange reserves, merchandise and service trade, real effective exchange rate, and reserve money.
OECD1: government debt and budget surplus or deficit.
OECD2: capacity utilization, consumer price index, current account balance, GDP, hourly earnings, industrial production, retail sales, interest rates, stock exchange index, and unemployment rate.
OECD3: investment and savings.
Statistics Canada: employment.

Euro Area

Eurostat: current account balance, gross domestic product, merchandise trade, and retail sales.
FERI: employment and hourly earnings.
Haver Analytics: synthetic euro exchange rate.
IMF: real effective exchange rate.

OECD1: government debt and budget surplus or deficit.

OECD2: capacity utilization, consumer price index, industrial production, M1, M3, interest rates, stock exchange index, and unemployment.

France

BOG: exchange rate.
IMF: foreign exchange reserves, merchandise and service trade, and real effective exchange rate.
Institut National de la Statistique et des Etudes Economiques:
employment.
OECD1: government debt and budget surplus or deficit.
OECD2: capacity utilization, consumer price index, current account balance, GDP, hourly earnings, industrial production, retail sales, interest rates, stock exchange index, and unemployment.
OECD3: investment and savings.

Germany

BOG: exchange rate.
Bundesanstalt Fur Arbeit: employment.
IMF: foreign exchange reserves, merchandise and service trade, and real effective exchange rate.
OECD1: government debt and budget surplus or deficit.
OECD2: capacity utilization, consumer price index, current account balance, GDP, hourly earnings, industrial production, M1, M3, retail sales, interest rates, stock exchange index, and unemployment.
OECD4: investment and savings.

Italy

Banca D'Italia: long-term interest rate.
BOG: exchange rate.
IMF: foreign exchange reserves, merchandise and service trade, and real effective exchange rate.
Istituto Nazionale di Statistica: employment.
OECD1: government debt and budget surplus or deficit.
OECD2: capacity utilization, consumer price index, current account balance, GDP, hourly earnings, industrial production, retail sales, stock exchange index, and unemployment.
OECD3: investment and savings.

Japan

Bank of Japan: adjusted monetary base and long-term interest rate.
BOG: exchange rate.
IMF: foreign exchange reserves, merchandise and service trade, and real effective exchange rate.
OECD1: government debt and budget surplus or deficit.
OECD2: capacity utilization, consumer price index, current account balance, employment, GDP, hourly earnings, industrial production, M1, M2, retail sales, short-term interest rate, stock exchange index, and unemployment.
OECD3: investment and savings.

United Kingdom

Bank of England: M2.
BOG: exchange rate.
IMF: foreign exchange reserves, merchandise and service trade, and real effective exchange rate.
OECD1: government debt and budget surplus or deficit.
OECD2: capacity utilization, consumer price index, current account balance, GDP, industrial production, retail sales, stock exchange index, interest rates, M4, unemployment, and weekly earnings.
OECD3: investment and savings.
U.K. Office for National Statistics: employment and M0.

United States

BOG: capacity utilization, exchange rate, industrial production index, M2, and interest rates.
BEA: gross domestic product, current account balance, and merchandise and service trade.
BLS: employment and consumer price index.
Federal Reserve Bank of St. Louis: adjusted monetary base and MZM.
IMF: foreign exchange reserves and real effective exchange rate.
OECD1: government debt and budget surplus or deficit.
OECD2: hourly earnings, retail sales, stock exchange index, and unemployment.
OECD3: investment and savings.